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ABSTRACT

Papers in this issue include the following: "Code-Mixing in Hongkong Cantonese-English Bilinguals: Constraints and Processes" (Brian Chan Hok-shing); "Information on Quantifiers and Argument Structure in English Learner's Dictionaries" (Thomas Hun-tak Lee); "Systematic Variability: In Search of a Linguistic Explanation" (Gladys Tang); "Aspect Licensing and Verb Movement in Mandarin Chinese" (Gu Yang); and "Intuitive Judgments of Hong Kong Signers About the Relationship of Sign Language Varieties in Hong Kong and Shanghai" (James Woodward). (JL)

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Editorial Note

CUHK Papers in Linguistics is published annually by the committee members of the Linguistics Research Laboratory. This issue reflects a variety of research interests among the contributors. Lee's paper deals with how information on quantifiers and argument structures is exemplified in some of the most popular learners' dictionaries available in the market. In Tang's paper, typological explanations for systematic variability in interlanguage performance are put forward.

This issue also includes contributions from two new colleagues of the Department of English. In the paper written by Yang, the properties of the INFL are discussed in relation to aspect licensing and verb movement in Mandarin Chinese. Woodward's research represents the first attempt to study the sign language varieties in Hong Kong, to see whether their origins can be traced to the Shanghai sign language varieties.

We are also pleased to include a paper by Brian Chan who has just obtained his M.Phil degree. His thesis focuses on the structural properties of code-mixing in Hong Kong bilinguals with respect to the constraints and processes discussed in the literature.

Finally, we wish to thank the Trustees of Lingnan University and the United Board of Higher Christian Education in Asia for funding this publication.

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Gladys Tang, Editor
February 1993

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Code-mixing in Hongkong Cantonese-English Bilinguals: Constraints and Processes[1]

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Abstract

This study focuses on the morphosyntactic aspects of Cantonese-English code-mixing as commonly spoken by bilinguals most of whom are native speakers of Cantonese. A corpus of Cantonese-English code-mixing collected from informal conversations is analysed in terms of structural properties, followed by a critique of the major constraints or principles which have been proposed in the literature. It is suggested that none of these constraints or principles are descriptively adequate in view of the data collected, and three alternative constraints, namely, the category equivalence constraint, the bound morpheme constraint, and the specifier constraint, are proposed. The possible implications of the constraints on bilingual processing are also discussed.

1. Introduction

By "code-mixing"(CM) I am referring to cases of intrasentential alternation of linguistic elements from two languages, to follow such researchers as Disciullo, Muysken and Singh (1986), Sridhar and Sridhar (1980), Kamwangamalu (1989) and Bokamba (1989), etc.

One of the major issues in the study of code-mixing is whether there are syntactic constraints on code-mixing. The predominant view nowadays is that there are, as suggested by a number of researchers who base their claims on empirical data of different varieties of code-mixing. (i.e. Poplack(1980) on Spanish-English, Kamwangamalu(1989) on Bantu-English/French, Sridhar and Sridhar(1980) on Kannada-English, etc.) Among the constraints which have been proposed, some of them are claimed to be language-universal and applicable to typologically diverse varieties of code-mixing. For instance, the Free Morpheme constraint is reported to be observed in Spanish-English (Sankoff and Poplack 1981), and to a large extent in Arabic-French (Bentahila and Davis 1983) and Spanish-Hebrew (Berk-Seligson 1986) amidst a few violations. The Government constraint is observed in the data of Hindi-English and French-Italian-English code-mixing as collected by Disciullo, Muysken and Singh(1986). The Equivalence constraint, on the other hand, is affirmed in Spanish-English (Sankoff and Poplack 1981) and German/Dutch-English (Clyne 1987).

Nevertheless, others have cast doubts on whether a "constraint-oriented" approach towards the study of code-mixing is justified. The alleged drawbacks of such an approach include the following: First of all, nearly all the universally postulated constraints proposed so far have counterexamples (Bokamba 1989). It leads researchers like Bokamba to suspect that the "constraint-oriented" approach is misguided in the first place. Secondly, in some cases, it is difficult to identify with consistency the grammatical code-mixing patterns as against other ungrammatical ones. Clyne (1987) notes a certain degree of variation of syntax in his corpus of German-English and Dutch-English code-mixing, which may be due to variation of "standard" and "sub-standard" forms and syntactic transfer of English syntax to Dutch and German structures. He also comments that the so-called "ungrammatical" patterns of code-mixing are "nothing more than a tendency" (p.762)

This article focuses on Cantonese-English code-mixing, which has seldom been studied with reference to constraints or other notions of current linguistic theories.[2] This does not mean that Cantonese-English is not subject to any constraints whatsoever. For example, the following sequences with asterisks hardly appear in spontaneous Cantonese-English code-mixing behaviour.

(1)[3]
a. néih yiu *seriously* tái yī go mahn tàih
You MOD seriously look DET CL question
You have to seriously look at this question.
* néih yiu yihng-jān-*ly* tái yī go mahn tàih

b. gó go *lecturer* séuhng tòhng *prepare* dāk m̀h hóu
DET CL lecturer attend lessons prepare COMP NEG good
That lecturer doesn't prepare well for his lessons.
* *That* góng sī séuhng tòhng *prepare* dāk m̀h hóu

Nor does the lack of grammatical studies on Cantonese-English imply that the variety is uninteresting. Quite the contrary, it exhibits many interesting phenomena. Mixing is possible within phrases the structure of which is vastly different in Cantonese and English. (ref. section 3) Even more fascinating are the rich, distinct Cantonese morphological processes which can be applied to English words with English phonological forms retained. For instance, in 2a, the English verb "run" is incorporated into the distinctly Cantonese "A-not-A" structure. In 2b and 2c, the English preposition "for" and "Whereas" appear on their own, while in other varieties prepositions and conjunctions rarely alternate in code with other elements in a code-mixed sentence. (ref. Kachru 1978; Joshi 1985)

(2)
a. go *program run*-m̀h-*run* dóu a ?
CL program A-NOT-A ASP
Can the (computer) program run?

b. yī dī cháan bán haih *for* sī yàhn yuhng tòuh
DET CL product COP for private use
These products are for private use.

c. *Whereas* kéuih fun gán gaau…
Whereas s/he sleep PROG
Whereas she is sleeping…

Among these few studies, Gibbons(1987) thinks that Cantonese-English is syntactically governed in some ways (ref. section 4), but he does not refer to those constraints or principles which are postulated to be universal as mentioned above. Leung(1988:37) thinks that Cantonese-English is bound by the Free Morpheme constraint and the Equivalence constraint.

However, in this article, I will show that the patterns of Cantonese-English are so diverse that they are not constrained by many of the universal constraints proposed in the literature. Instead, it will be argued that the data suggest a number of alternative constraints. I will also suggest that these constraints provide insights into the psycholinguistic processes involved in code-mixing production, and help to identify the role of L1 and L2 in code-mixing behaviour. Thus, "constraints" are very useful tools in understanding some of the psychological aspects of code-mixing.

2. Collection of Data

Before I proceed, let me provide some background information to the variety of code-mixing under study. Code-mixing with Cantonese and English is a common feature in conversations of Hongkong Cantonese-English bilinguals nowadays. Their L1, or mother tongue, is Cantonese, but they acquire English as L2 in schools. There is no evidence that code-mixing is learnt in any manner, but, of course, a certain proficiency level in English is assumed, as code-mixing is recognized as a distinct ability of bilinguals.[4]

The data used in this article contain 500 utterances which are taken from recorded speech and written transcriptions of spontaneous conversations in situations ranging from tutorial discussions, fellowship sharing, informal conversations, TV and radio interviews,etc. The recorded data were taken from radio phone-in programmes, so that a natural setting was ensured without the speakers knowing the recording process. The inclusion of the transcribed data is also intended to ensure the natural setting, and, in addition, to elicit the production of a wider spectrum of speakers.

3. A Linguistic Description of the Cantonese-English Data

A distinction is made between the major patterns, in which an English word is surrounded by a predominantly Cantonese discourse, and the minor patterns, in which more than one English word alternate with Cantonese. Such a distinction, which is based purely on the frequency of the patterns found in my corpus as well as Gibbons' (1987) corpus, is meant to serve descriptive purposes only, without any implications on the linguistic properties of these patterns.

As for the major patterns, I describe them in terms of the word class to which the English words belong. There are four major classes, namely, "noun-mixing", "verb-mixing", "adjective or adverb-mixing" and "preposition or conjunction-mixing", which mirror the N, V, A, P taxonomy in the generative framework. In the generative framework, N,V,A,P are postulated to be the four major categories in languages (Radford 1988). The minor patterns refer to the fragments which contain more than one English words.

The following statistics show the number of utterances which fall into the sub-groups of "noun-mixing", "verb-mixing", "adjective or adverb-mixing", "preposition or conjunction-mixing" and "fragment", and the percentage of the utterances these sub-classes contain out of the total of 500 utterances.[5]

	No. of utterances	Percentage
1. Noun-mixing	260	52.0%
2. Verb-mixing	148	29.6%
3. Adjective or Adverb-mixing	84	16.8%
4. Preposition or conjunction-mixing	11	2.2%
5. Fragment	127	25.4%

3.1 The major patterns

3.1.1 Verb-mixing

By "verb-mixing" I am referring to the pattern of Cantonese-English code-mixing in which an English verb is surrounded by a predominantly Cantonese discourse. The distribution of the English verb is, as can be observed from the examples below, in positions where a Cantonese verb is distributed; that is, after the subject NP and before the object NP in declarative sentences.

Some of the examples of verb-mixing are cited below:

(3)
a. néih deih hó yíh *ignore* kéuih
You PL MOD ignore him
You can ignore him.

b. kéuih deih *plan* jō yī go syú ga heui ōu jōu léuhk hàhng
They PL plan ASP DET CL summer vacation go Europe travel
They have planned to go traveling to Europe this summer vacation.

c. go *program run*-m̀h-*run* dóu a
CL program A-NOT-A ASP Q
Can the (computer) program run?

d. gó go taai táai sèhng yaht séung *show off*
DET CL lady always want show off.
That lady always want to show off.

In 1a, a single English verb "ignore" is distributed after the Cantonese subject NP "*néih deih*(you)" and before the Cantonese object NP "*kéuih*(him)". In 1b, the English verb "plan" is followed by a Cantonese perfective aspect marker "*jó*" In 1c, the English verb "run" is incorporated into a distinctly Cantonese morphological structure which appears in questions, "A-not-A". In 1d, a complex verb, "show off", is mixed with Cantonese.

There are some characteristics of the verb-mixing data which deserve attention. Firstly, in most cases the root form of the English verb appears. Tense and agreement are not marked by overt morphological markers, contrary to English syntax but conforming to Cantonese syntax. An even more obvious case in which the English verb is adapted to Cantonese syntax would be its appearance in such distinctly Cantonese structures as A-not-A and reduplication.

3.1.2 Noun-mixing

By "noun-mixing" I am referring to the pattern of code-mixing in which an English noun is surrounded by a predominantly Cantonese discourse. The distribution of an English noun is in positions where the Cantonese nouns are distributed in Cantonese; that is, at the head of an NP after a Cantonese determiner and/or a classifier, if any.

Some examples of noun-mixing are cited below:

(4)
a. gó go *lecturer* séuhng tòhng *prepare* dāk m̀h hóu
DET CL lecturer attend lessons prepare COMP NEG good
That lecturer doesn't prepare well for his lessons.

b. kéuih deih heui jó mahk dong lòuh sihk *lunch*
They PL go ASP MacDonalds eat lunch
They have gone to MacDonalds for lunch.

c. *William* chàhm yaht máaih ge *walkman* haih sān *model*
William yesterday buy RCL marker walkman COP new model
The walkman which William bought yesterday is a new model.

In 2a, the English noun "lecturer" appears in the subject position, and it is marked by the Cantonese determiner and classifier "*gó go*". In 2b, the English noun "lunch" appears in the object position after the Cantonese verb "*sihk*(eat)". In 2c, the English noun "walkman" is modified by a prenominal relative clause.

From the data, one can easily observe signs of the English noun being adapted to Cantonese syntax. Firstly, sequences of CL(Cantonese) N(English) are common, which in fact violates English syntax (as English does not possess a rule as NP->CL N). Secondly, if a relative clause is to appear, it is found to be prenominal rather than postnominal, an order which conforms to Cantonese syntax but violates English syntax.

3.1.3 Adjective or adverb-mixing

By "adjective or adverb-mixing" I am referring to the pattern of code-mixing in which an English adjective or adverb is surrounded by a predominantly Cantonese discourse. The distribution of an English adjective or adverb is in positions where the Cantonese adjectives and adverbs can also be distributed in Cantonese. For the English adjectives, they either occur at predicative positions after the grammatical subject or the attributive position before the head noun and after the determiner.

Let's now turn to some examples of adjective-mixing.

(5)
a. kéuih jouh yéh hóu *serious*
He do things EMP serious.
He is very serious to his work.

b. kéuih haih yāt go hóu *critical* ge yàhn
He COP NUM CL EMP critical ADJ person
marker
He is a very critical person.

c. néih tīng yaht *free*-m̀h-*free* a
you tomorrow free(A-not-A) Q
Are you free tomorrow?

While an English adjective may appear in the predicative position (i.e. after subject NP within a predicate; e.g. 3a) or the attributive position (i.e. before head noun within an NP; e.g. 3b), it may take on the distinctly Cantonese structure of A-not-A (e.g. 3c) when distributed predicatively.

The following are some examples of adverb-mixing:

d. néih yiu *seriously* tái yī go mahn tàih
You MOD seriously look DET CL question
You have to seriously look at this question.

e. *Honestly*, ngóh gok dāk kéuih ge léuih pàhng yóuh
Honestly I feel ASP he GEN girlfriend
haih hóu ngok ge yàhn
COP EMP unkind ADJ person
marker
Honestly, I feel his girlfriend is a very unkind person.

f. kéuih hóu *sensible* gám wah...
s/he EMP sensible ADV say
marker
He/She says very sensibly that...

For the "ly-adverb", it may appear before the VP(e.g. 4d), or before the clause(e.g. 4e). In 4f, the abverb is formed by an English adjective "sensible" and a Cantonese adverb marker, "*gám*", and it also occurs at the preverbal position.

3.1.4 Preposition or conjunction-mixing

By "preposition-mixing" I am referring to the pattern of code-mixing in which an English preposition is surrounded by a predominantly Cantonese discourse. The distribution of an English preposition is prenominal, whereas in Cantonese there are both prepositions and postpositions. For instance,

(6)
a. gaau yuhk hohk yún haih *under* gaau yuhk sī chyúh
Education College COP under Education Department
The Education colleges are under the Education Department.

b. *After* yī go *review* jī houh...
After DET CL review P
After this review...

In both 6a and 6b, the English prepositions "under" and "After" are distributed prenominally. A special thing about these patterns is that unlike other patterns the Cantonese equivalents of these English prepositions are not distributed in the same way. The Cantonese equivalents are, in these contexts, postnominal. (i.e. "hah"(under) and "houh"(After)) In 6b, the postnominal "houh" co-occurs with "After". This may well indicate that the English prepositional rule is actively accessed in the production of such code-mixing patterns.

By "conjunction-mixing" I am referring to cases in which an English conjunction is surrounded by a predominantly Cantonese discourse. The distribution of these conjunctions is compatible with that of equivalent Cantonese conjunctions, that is, clause-initial positions.

c. *Whereas* kéuih fun gán gaau...
CONJ he/she sleep PROG
Whereas he/she is sleeping...

d. néih sīn jouh yùhn yī yeuhng, *and then* ngóh wúih béi daap ngon néih
you first do PFT this CONJ I MOD give answer you
You complete this (exercise) first, and then I give
you the answer.

3.2 The minor patterns

Let's look at the minor patterns, that is, the fragments in which more than one English word alternate with Cantonese elements in a sentence.

In describing the fragments, Gibbons (1987:59) observes that "in the great majority of cases where the fragment of English consists of two words or more, it retains English grammar internally, while not disrupting the surrounding Cantonese grammar".

Two points can be made from Gibbons' observation. Firstly, the internal distribution of English elements must be in conformity with the grammar of English. Secondly, in terms of external distribution, the fragment of English is distributed in places where the surrounding Cantonese syntax is not disrupted. The overall sentence structure of the code-mixed utterance thus conforms to Cantonese syntax. These two points specify the structure of fragments.

Besides, Gibbons also made the observation that "where two or more English words are introduced, one will be innermost in a phrase, while the other will be next innermost". (Gibbons 1987:62) Gibbons does not define what "innermost parts" are formally. Judging from the examples he gives, "the most innermost parts" are referred to as heads of a phrase. The "next innermost parts" are referred to as modifiers which are immediately adjacent to the corresponding heads, and those modifiers further adjacent to these "next innermost parts" would be "the *further next* innermost" parts. Gibbons(1987:62) further specifies that "intrusion of code A into base code B takes place at the innermost parts of the syntactic structure".

In other words, by Gibbon's observation on Cantonese-English, the head of a phrase may appear in English on its own. This is because the head itself is the most innermost constituent anyway. The modifier, however, cannot appear in English without its head and, if any, other modifiers which are closer to the head also appearing in English. This is so because the head and these modifiers would be the more "innermost" constituents.

In the light of these, a fragment consists of a head and its modifiers. This point specifies the form of the fragments.

The above specifications of fragments in Cantonese-English work well for my data. Below are some examples of these fragments:

(7)
NP(Eng.)
a. kéuih go jái jing yāt haih *naughty boy*
PRON CL son ADV COP naughty boy
Her son is really a naughty boy.

VP(Eng.)
b. hóu sām kéuih *keep his mouth shut*
good heart he keep his mouth shut
I hope he keeps his mouth shut.

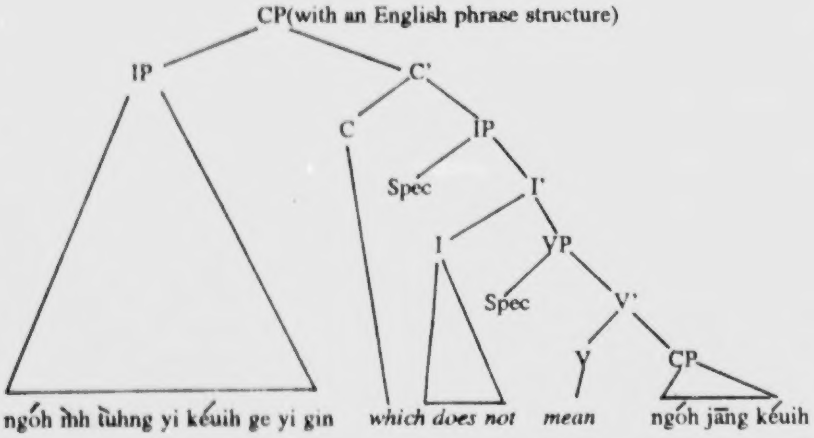
ADJP(Eng.)
c. gó dī gaau sī haih *properly train(ed)*
DEM CL teacher COP properly trained
Those teachers are properly trained.

PP(Eng.)
d. m̀h jī dī jē wúih-m̀h-wúih *out of stock* ge nē
NEG know CL umbrella MOD(A-not-A) out of stock PRT
I don't know if the umbrellas are out of stock.

In other cases in which the fragments are not projections of a major word category, it seems plausible that such sentences are generated by phrase structure rules from the English grammar, accompanied by a process in which the Cantonese phrases are inserted into places where an English phrase of an equivalent category is distributed. Below is an example of these cases:

(8)
a. ngóh m̀h tùhng yi kéuih ge yi gin, *which does not mean* ngóh jāng kéuih
I NEG agree he GEN opinion I hate him
I do not agree to his opinions, which does not mean I hate him.

Evidence of the claim that these sentences are generated from the English grammar can be found in the realization of I, ("Inflection" in the X-bar framework) in 11a (i.e. "does"), and the postmodifying relative clause, which are absent in Cantonese. Besides, the absence of verb "to be" and wh-elements in other intrasentential code-mixing patterns, which, as discussed, result from an English word/phrase occupying a place where a corresponding Cantonese category is distributed, also suggests that the cases in question stem from the English grammar.[6]


CP(with an English phrase structure)
IP
C'
C
IP
Spec
I'
I
VP
Spec
V'
V
CP
ngóh m̀h tùhng yi kéuih ge yi gin
which does not
mean
ngóh jāng kéuih

4. Critique of the major constraints and principles

In this section, a number of constraints and principles which have been proposed in the literature are evaluated with reference to my data of Cantonese-English. Among them are "language-universal" ones, which are based on studies of different varieties of code-mixing, and "language-specific" ones, which are based on Gibbons' observations on his Cantoense-English data (Gibbons:1987).

4.1 Language-universal cosntraints

4.1.1 The Free Morpheme constraint

The Free Morpheme constraint stipulates that mixing is not allowed between a free morpheme and a bound morpheme. (ref. Poplack 1980:585-586; Sankoff and Poplack 1981:5)

e.g. (Spanish-English) *run-eando
PROG

The Free Morpheme constraint fails to cover the following Cantonese-English patterns:

(9) Violations (Cantonese-English):

a. verb-mixing V(Eng.) ASP(Cant.)
kéuih deih *plan* jó yī go syú ga heui ōu jōu léuhk hàhng
They PL plan ASP DET CL summer vacation go Europe travel
They have planned to go traveling to Europe this summer vacation.

b. adverb-mixing: ADJ(Eng.) ADV marker(Cant.)
kéuih hóu *sensible* gám wah...
s/he EMP sensible ADV say
marker
He/She says very sensibly that...

c. "A-not-A": ADJ(Eng.) NEG(Cant.) ADJ(Eng.)
néih tīng yaht *free*-m̀h-*free* a
you tomorrow free (A-not-A) Q
Are you free tomorrow?

In 9a, an English verb, a free morpheme, is inflected by a Cantonese aspect marker, a bound morpheme. In 9b, an English adjective, a free morpheme, is followed by a Cantonese adverb marker, which is a bound morpheme. In 9c, an English adjective, a free morpheme, alternates with the Cantonese negative marker, which is a bound morpheme. All these cases obviously violate the Free Morpheme constraint.

4.1.2 The Equivalence constraint

The Equivalence constraint stipulates that mixing is not allowed between sentence constituents the order of which is different in the two languages concerned. (ref. Poplack 1980:586; Sankoff and Poplack 1981:5-6) As shown below, the order of an adjective is different in a Spanish noun phrase (i.e. postnominal) and that in an English noun phrase (i.e. prenominal) Thus, by the Equivalence constraint, there is no mixing or code-alternation between a noun and an adjective in Spanish-English.

e.g. (Spanish) NP-> DET N ADJ
(English) NP-> DET ADJ N

By the Equivalence constraint, code-mixing can take place between sentence constituents the order of which is the same in the two languages concerned. This also implies the sentence constituents under comparison are of the same categories. The presence of equivalent categories as a condition for the observance of the Equivalence constriant is explicitly stated in Sankoff and Poplack (1981:5-6).

The Equivalence cosntraint fails to cover the following patterns in Cantonese-English code-mixing.

(10)
a/ [RCL(Cantonese)N(English)]NP
William chàhm yaht máaih ge *walkman* haih sān *model*
William yesterday buy RCL walkman COP new model
marker
The walkman which William bought yesterday is a new model.

b/ [CL(Cantonese)N(English)]NP
a *Paul* gei jó jēung *postcard* bei ngóh
AFFIX Paul send ASP CL postcard to me
Paul sent a post card to me.

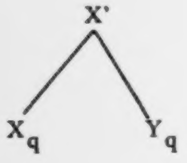
In 10a, the English noun "walkman" is premodified by a relative clause. However, the order of a relative clause in noun phrases is different in English (i.e. postnomnal) and Cantonese (i.e. prenominal) By the Equivalence constraint, there should be no mixing between a relative clause and a head noun in Cantonese-English, but there is in reality.

4.1.3 The Government constraint

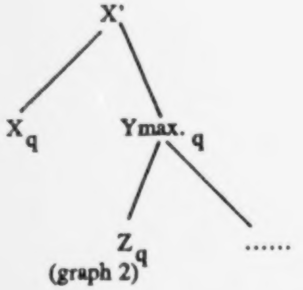
The Government constraint stipulates that code-mixing is not allowed between elements bearing the same language index, the assignment of which is based on government relations, with "government" defined as:

" X governs Y if the first node dominating X also dominates Y, where X is a major category N, V, A, P and no maximal boundary intervenes between X and Y." (ref. Disciullo, Muysken and Singh 1986:6)

By the Government constraint, if X governs Y, X and Y should receive the same index "q" and there is no mixing between them (ref.graph 1). In case Y is a maximal projection which in turn dominates more than one lexical element , the "highest" element which assymetrically c-commands the other lexical elements should receive the same index as X. (i.e. "q" ;ref. Disciullo, Muysken and Singh 1986:6) Therefore, there is no mixing between that "highest" element and X (ref. graph 2).



(graph 1)



(graph 2)

In many examples of verb-mixing, a single English verb may appear without the "highest" element of the noun phrase it governs also appearing in English. Similarly, in patterns of preposition-mixing, a single English preposition may appear without any element of the noun phrase it governs also appearing in English. These cases violate the Government constraint. (ref. 3.1.1, 3.1.4)

4.1.4 The Matrix Code Principle

The Matrix Code principle stipulates that the mixed elements must conform to the morphosyntactic structure of the matrix code (i.e. the native language, or L1) irrespective of any possible violations of that of the embedded code. (i.e. the foreign language, or L2) (ref. Kamwangamalu 1989)

It is a descriptively powerful principle, covering most patterns whereby the distribution of the English words or fragments is compatible with that of the Cantonese words or fragments of the same category. (i.e. except preposition-mixing cases and sentences bearing an English structure)

Besides, it describes a number of phenomena in which an English word is incorporated to the distinct morphosyntactic structure of Cantonese, such as an English verb or adjective which undergoes "A-not-A" structure or reduplication, or an English noun preceded by the Cantonese classifier, or an English verb inflected by a Cantonese aspect marker.

However, the Matrix code principle is not free from weaknesses. It does not really specify the distribution of the mixed elements. Besides, as the principle only states that the morphosytnax of L1 (in this case, Cantonese) is preserved, it cannot describe the fact that the internal constituency of the English fragments conforms to the English phrase structure rather than the Cantonese one. For instance, in 11a, the English preposition phrase "out of stock", contains a complement which is another preposition phrase "of stock". Such a sequence of [P [P NP]$_{PP}$]$_{PP}$ hardly appears in Cantonese.

In addition, it erroneously rules out cases in which a L2 phrase structure is introduced, (e.g. 11b; ref. 3.2) as it rules that only the morphosyntax of L1 (the matrix code) is preserved.

(11)
a/ Fragments:
m̀h jī dī jē wúih-m̀h-wúih *out of stock* ge nē?
NEG know CL umbrella MOD(A-not-A) out of stock PRT
I don't know if the umbrellas are out of stock.

b/ Cases with English phrase structure
ngóh m̀h tùhng yi kéuih ge yi gin, *which does not mean* ngóh jāng kéuih
I NEG agree he GEN opinion I hate him
I do not agree to his opinions, which does not mean I hate him.

4.1.5 The Dual Structure Principle

The Dual Structure Principle stipulates that "the internal structure of the guest constituent need not conform to the constituent structure rules of the host language, so long as its placement in the host language obeys the rule of the host language. This can be clearly illustrated by the following example of Kannada-English. The Dual Structure principle states that the English fragment, which is an NP, is distributed where the Kannada NP is distributed in an otherwise Kannada sentence. Besides, the principles also predicts that the internal constituency of the English fragment conforms to English grammar rather than Kannada grammar. The English fragment contains a postmodifying phrase "of considerable courage", while in Kannada, according to Sridhar and Sridhar (1980), the modifiers are prenominal.

e.g. (Kannada-English)
avanu abba man of considerable courage.
(He is a man of considerable courage)
(Sridhar and Sridhar 1980:412)

The Dual Structure Principle predicts that the internal structure of English fragments in Cantonese-English sentences as conforming to the grammar of English. As for its weaknesses, the principle does not address the properties of the single-word cases, the major patterns in Cantonese-English. It does not specify the distribution of the mixed elements; that is, it does not predict the places in a Kannada sentence where English words or phrases are allowed to appear. Furthermore, it states that an element of L2 (i.e. the guest language) is mixed under a phrase structure of L1 (i.e. the host language). However, in some cases, the reverse phenomenon can be found. (e.g. 10a.)

4.2 Language-specific constraints (Gibbons:1987)

4.2.1 The "closed-class" item constraint

This constraint stipulates that "closed-class" or "structure" words (such as English determiners, conjunctions and auxiliary verbs) do not appear as single-word in Cantonese-English CM, unless in conjunction with the "open-class" or "content" words.

e.g. néih hó yih *go and* tái háh
you MOD go and look ASP
you can go and have a look
* néih hó yih heui *and* tái háh
(Gibbons 1987:61)

However, examples of preposition and conjunction-mixing (ref. 3.4) are obvious violations of this constraint.

4.2.2 The "fragment" constraint

Gibbons(1987:59) makes the following observation on fragments: The longer elements of English must be fitted "at the same point as the equivalent elements of Cantonese". So, in the following case, the English fragment, which is an NP, is distributed in the position where a Canotnese NP is also distributed in an otherwise Cantonese sentence. I rename Gibbons's observation the "fragment" constraint.

e.g. m̀h sái joi wán *part-time job* àh
NEG MOD again find part-time job Q
No need to find a part-time job? (Gibbons 1987:59)

Obviously, the constraint does not address the major patterns in Cantonese-English code-mixing, the single word cases.

4.2.3 The "innermost" constituent constraint

Another observation made by Gibbons(1987) concerns the relative priority of different constituents that may appear in Cantonese-English. As elaborated in 3.2, Gibbons (1987) observed that in Cantonese-English, the head of a phrase, being the most innermost parts, may appear in English on its own. A modifier cannot appear in English on its own if the head or other modifiers closer to the head, being the "more" innermost parts, do not appear in English.

I rename Gibbons' observation the "innermost" constituent constraint. By the constraint, a constituent may appear in English in Cantonese-English if it is the head. If it is a modifier, the corresponding head and, if any, the modifiers closer to the head must also appear in English. Accordingly, the following sequence with asterisk is ruled out as "the", being a modifier, cannot appear in English without the head "*yùhn yāng*(reason)" appearing in English.

kéuih déih giu ngóh *explain the reason*
They PL ask me explain the reason
They ask me to explain the reason.
*kéuih deih giu ngóh *explain the* yùhn yāng.
(Gibbons 1987:62)

In terms of the most recent X-bar theory on phrase structure, what was generally known as the "modifier" in traditional grammar falls into three kinds, namely, the complements, which expands a constituent from zero bar to single bar; the adjuncts, which expand a constituent from zero/single/double bar to the same bar level; and the specifiers, which expands a constituent from single bar to double bar. Let's now refer to the X-bar framework to examine the innermost constituent constraint (ref. Radford 1988).

In the light of the X-bar framework, however, it is found that the following examples violate the innermost constituent constraint:

(12)
a. néih yiu *seriously* tái yī go mahn tàih
You MOD seriously look DET CL question
You have to seriously look at this question.

b. kéuih haih yāt go hóu *critical* ge yàhn
He COP NUM CL EMP critical ADJ person
marker
He is a very critical person.

c. kéuih go jái jing yāt haih *naughty boy*
PRON CL son ADV COP naughty boy
Her son is really a naughty boy.

In 12a, the adverb "seriously", an adjunct, appears in English without the head verb "*tái*(look at)"also appearing in English. In 12b, the attributive adjective "critical", a complement, appears in English without the head noun "*yàhn*(man)" also appearing in English. In 12c, the noun phrase "naughty boy", a verb phrase complement, appears in English but the head verb "*haih*(COP)" does not.

5. Revised Constraints

Considering the inadequacies of the constraints or principles when applied to the Cantonese-English code-mixing data, I propose a number of alternative constriants in this section.

5.1 The category-equivalence constraint

Two generalizations can be drawn from the patterns of Cantonese-English code-mixing we have looked at. Firstly, for the single-word cases (except some preposition-mixing cases[7]) and the fragments, the elements of English are embedded in positions where the corresponding Cantonese categories are distributed. Secondly, for the code-mixed sentences and the preposition-mixing cases with an English phrase structure, elements of Cantonese are embedded in positions where the corresponding English categories are distributed.

To cover these two generalizations, the following constraint is formulated:

(13)The category equivalence constraint
"In code-mixing, an element from the embedded code is distributed in a position where an element of the same category from the matrix code is distributed in the matrix code. The matrix code is the language from which the sentence structure of the code-mixed sentence is derived, and the embedded code is the language from which the mixed elements are derived. Such an element range from a morpheme to a phrase."

Here, I must say there have been many researchers who also view code-mixing as involving a sentence constituent being substituted by a constituent of the same category from another language. For instance, the Dual Structure principle proposed by Sridhar and Sridhar (1980) stipulates that in code-mixing a fragment of the guest language be inserted into a place where the rule (i.e. sentence structure) of the host language is not violated. That is possible only when the guest constituent is distributed in a place where a host constituent of the same category is distributed. In his parsing model for code-mixing, Joshi(1985) explicitly states a switch rule which allows all categories except closed class words to switch from the matrix language to the embedded language. In Nishimura's study (1986) of Japanese-English, the switch is not unidirectional, and constituents from either Japanese or English may be switched to constituents of the same category in another language. In their study of Singaporean Chinese-English, Kamwangamalu and Lee (1991:251-255) argue that the code-mixed sentences, which are assigned "Chinese" as the matrix code in most cases, involve "lexical" and "structural" substitution. That is, a Chinese constituent (i.e. lexical or phrasal) of an otherwise Chinese sentence is substituted by an English constituent of the same category in a code-mixed sentence.

Here, the category equivalence constraint is proposed mainly because it is descriptively most powerful compared to the other constraints and principles for Cantonese-English. (ref. section 4) Apart from its empirical adequacy, the constraint also explains the absence of certain English items, such as the auxiliary verbs, the articles and the clause complementizer "that", in Cantonese-English as single-words, since these items obviously do not have equivalents in Cantonese.

There is an apparent shortcoming of the category equivalence constraint. It cannot explain the non-switchability of pronouns, modals, quantifiers and possessive as single-word cases, even though these items have equivalents in Cantonese as well. My position concerning this is that some other constraints are accountable for the non-switchability of these items. The category equivalence constraint still works over most patterns of Cantonese-English code-mixing.

5.2 The bound morpheme constraint

The second constraint, the bound morpheme constraint, originates from the observation that in code-mixing only a bound morpheme of the matrix code can combine with a free morpheme of the embedded code, but not vice versa. Such a possibility can be illustrated by the obvious violations of the Free Morpheme constraint found in the Cantonese/English data, that is, the sequences of:

Free Bound
i/ V(English) ASP (Cantonese) (e.g. 3b)
kéuih deih *plan* jó yī go syu ga heui ōu jōu léuhk hàhng
They PL plan ASP DET CL summer vacation go Europe travel
They have planned to go traveling to Europe this summer vacation.

ii/ ADJ(English) ADV marker(Cantonese) (e.g. 5f)
kéuih hóu *sensible* gám wah...
s/he EMP sensible ADV say
marker
He/She says very sensibly that...

iii/ V/ADJ(English) NEG(Cantonese) V/ADJ (English) (e.g. 3c,5c)
go *program run*-m̀h-*run* dóu a
CL program A-NOT-A ASP Q
Can the (computer) program run?

néih tīng yaht *free*-m̀h-*free* a
you tomorrow free(A-not-A) Q
Are you free tomorrow?
(ref. 3.1.1, 3.1.3)

Besides, most of the alleged violations of the Free Morpheme constraint also assume the form of a free morpheme of the native language and a bound morpheme of the foreign language. (i.e. Bokamba on Arabic-English and Nairobic Swahili/English 1989; Bentahila and Davis on Arabic-French 1983; Nartey on Adanme-English 1982) In other studies, (i.e. Kamwangamalu on Bantu-English and Bantu-French 1989, Romaine on Punjabi-English 1989) it has been mentioned that roots of the foreign language are inflected by the native language morphology in code-mixing. The bound morpheme constraint is aimed at capturing these cases.

(14)The bound morpheme constraint
" A bound morpheme of the embedded code does not occur in code-mixing unless it is attached to the corresponding roots from the embedded code, according to the word-formation rules of the embedded code.[8]"

With reference to the remaining problems of category equivalence constraint, the bound morpheme constraint may help solve the puzzle. If one considers the bound morphemes as markers of grammatical categories such as tense and agreement in a language, the bound morpheme constraint generally prohibits the grammatical categories of the embedded code from entering the matrix code. As regards the case of possessives, modals and pronouns, the first is automatically ruled out by the bound morpheme constraint. The non-switchability of the other two may be explained by the fact that their morphological forms are inextricably linked with grammatical categories like tense and agreement, and case respectively.

5.3 The specifier constraint

The third constraint, the specifier constraint, is in fact partly inspired by Gibbon's innermost constituent constraint, which stipulates that the innermost constituent, that is, the head of a phrase, must appear in English in order for its modifiers to appear in English as well. (ref. 4.2.3) Such a constraint is able to explain the non-switchability of quantifiers/articles as single-word in Cantonese-English code-mixing. (ref. Gibbons 1987:58,62) However, if one considers this constraint more carefully, one can easily find a lot of violations as well, which involve mixing of the following categories: attributive adjectives, adverbs, and object NP. (ref. 4.2.3 sentences 12a,b,c.) Yet, if one compares the quantifier or the article with these violations, the difference would be that the former is clearly a specifier while the latter items are only complements or adjuncts in terms of X-bar framework. In the light of these , the following hypothesis is proposed.

(15)The specifier constraint
" In Cantonese-English code-mixing, the specifier of a phrase does not appear in English without other constituents of the phrase, the head and, if any, the complements and adjuncts, appearing in English. The constraint holds as long as the Cantonese serves as the matrix code."

The predictions of the specifier constraint would be such that the following items do not appear in English if the other constituents of the phrase do not appear in English:

i/ quantifiers- NP specifier
ii/ degree adverb- ADJP specifier
iii/ primary auxiliary verbs - VP specifier
iv/ subject NP (except Proper names)- IP specifier
v/ wh-words -CP specifier

It is found that most of the predictions of the constraint conform to the data, except for a few cases in which the subject NP appears in English. Yet, their status as genuine violations of the specifier constraint is in doubt. There are two reasons: first, the nouns may be seen as syntactically adapted to Cantonese. As illustrated in the following examples, the nouns which appear in subject position are either proper names or generic noun phrases.

(13)
a. *Christine* jui gahn hóu chíh móuh mūt *mood* gám
Christine recently seem NEG CL mood PRT
Christine seems not to be in good mood recently.

b. *computer* hó yíh tau gwo *keyboard* tàih gōng yāt dī *feedback*
computer can through keyboard provide NUM CL feedback
The computer can provide some feedback through the keyboard.

The proper names, like "Christine" or "Rosalie", may be treated as NPs which are adapted to Cantonese, as they can be preceded by the Cantonese affix "a". Syntactic adaptation to Cantonese is even more obvious with the generic NP's as the article or the plural suffix are both omitted, which are otherwise needed to mark the generic usage of the common noun in English.

Secondly, the occurrence of these cases is rare. (i.e. 6 out of 260 cases of noun-mixing)

6. Psycholinguistic Processes of Code-mixing Production

This section attempts to investigate into the psycholinguistic processes that are involved in the production of code-mixing. Based on the earlier description of Cantonese-English and the three constraints, my own proposal for a production model of code-mixing would be something like this:

The code-mixer only has access to the matrix code(MC) in deriving the sentence structure of the code-mixed utterance. In my model, the matrix code may be either Cantonese or English. While the former is often the case, the latter is also possible in code-mixed utterances in which an English phrase structure is introduced. (ref. 5.1) The code-mixed utterance is produced with lexical items drawn from either the matrix code lexicon or the embedded code(EC)lexicon.

For the single-word cases, the lexical items are drawn directly from the embedded code lexicon to fit in a sentence structure generated by the matrix code grammar. For those elements of EC which take on the morphological characteristics of MC, they are drawn to the MC lexicon first, considering that the mental lexicon contains the morphological rules. (ref. Aitchison 1984, Ch10) This may capture cases in which the English lexical elements are incorporated into such distinct Cantonese morphological structures as "A-not-A" or reduplication. (ref. 3.1.1, 3.1.3) For those fragments the internal constituency of which observes EC grammar, the lexical elements of EC are drawn to the EC grammar from the EC lexicon before they fit in the sentence structure generated by the MC grammar. This may capture the case of English phrases in Cantonese-English. (ref. 3.2)

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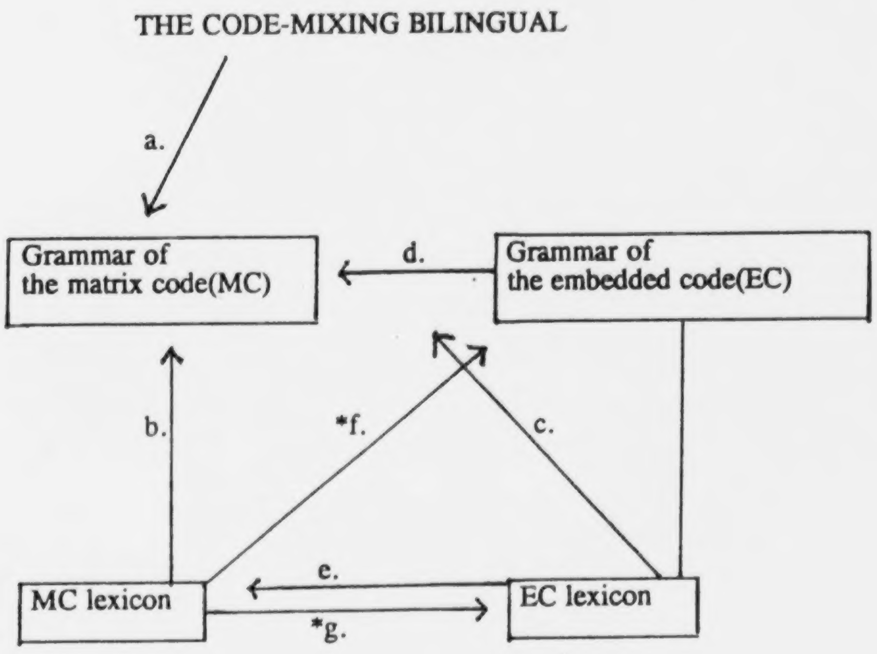
THE CODE-MIXING BILINGUAL
a.
Grammar of the matrix code(MC)
d.
Grammar of the embedded code(EC)
b.
*f.
c.
e.
MC lexicon
EC lexicon
*g.

"A Psycholinguistic Model of Code-Mixing Production"

Grammar- PS rules;
Lexicon- lexical items, affixes and word-formation rules

a./ The code-mixing bilingual accesses the matrix code, which may be his/her L1 or L2, in deriving the sentence structure.

b./ Lexical items are drawn from the MC lexicon.

c./ Lexical items are drawn from the EC lexicon.

d./ Fragments are drawn from the EC lexicon through the EC grammar.

e./ Lexical items are drawn from the EC lexicon through the MC lexicon which are morphologically adapted

*f./ The EC grammar, however, cannot take the items from the MC lexicon, either directly or through the MC grammar by the specifier constraint.

*g./ Lexical items of the MC lexicon cannot enter the EC lexicon by the bound morpheme constraint.

The category equivalence constraint serves as a filter on interfaces c.-d., so that the elements from EC are fitted in the appropriate slots of the sentence structure generated by MC grammar. It also acts as a filter on interface e., so that morphological rules of MC apply to the lexical items of only certain categories from EC lexicon.

The three constraints which I propose earlier can be represented as filters in the above model. The category equivalence constraint can be viewed as a constraint which limits the kind of elements of the embedded code which are to be embedded into particular slots in the sentence structure generated by the matrix code grammar. The bound morpheme constraint can be represented as a filter between the MC lexicon and the EC lexicon, so that elements of MC cannot take on the morphological characteristics of the EC. The specifier constraint is a filter between the MC lexicon and the EC grammar, so that elements of MC cannot be expanded according to the PS rules of the EC grammar.[9]

7. Conclusions

This paper describes patterns of Cantonese-English code-mixing according to the syntactic categories of the English elements. Based on the description, it is argued that the major constraints and principles that have been formulated on other varieties of code-mixing cannot apply to Cantonese-English as there are violations. It is then suggested that Cantonese-English code-mixing is subject to a number of different constraints, namely, the category equivalence constraint, the bound morpheme constraint and the specifier constraint. These constraints, apart from their empirical adequacy, also bear important implications on production of code-mixing.

NOTES

1. This article is a shortened version of my M.A. dissertation which was done at the Chinese University of Hong Kong. I wish to acknowledge the many helpful comments made by Dr Thomas Lee Hun-tak, Dr Virginia Yip, Professor David Pollard and others on the earlier drafts of the dissertation. My correspondence at present is as follows: Mr Brian Chan Hok-shing. The English Department. City Polytechnic of Hong Kong. Tak Chee Avenue. Kowloon. Hong Kong. Tel: 7887185. Email: hkucs!CPCCVX!ENBCHAN.

2. Gibbons (1979, 1987) and Leung (1988) are the only studies on the grammatical aspects of Cantonese-English I know.

3. The transcriptions in this paper follow the Yale system.

4. For a more detailed description of the bilingual situation in Hong Kong, as well as a sociolinguistic study of the use of Cantonese-English code-mixing, please refer to Gibbons (1987).

5. Since there may be more than one instance of mixing within one utterance, the "total" of adding up all types in "No. of utterances" exceeds 500, and, by the same reason, the "total" percentages by adding up those of all types exceeds 100.

6. I would not investigate further the origin of these sentences the structure of which is generated from English. My observation is that these sentences are not common, even in the code-mixing mode, and the speaker may utter it to achieve a special rhetorical effect.(e.g. to make emphasis)

7. The preposition-mixing cases which contain the sequence of NP COP P NP (e.g. 6a in 3.1.4) are considered to bear an English phrase structure in this paper. This is because the same idea needs to be expressed in an NP COP P NP P sequence (i.e. preposition-NP-postposition) in Cantonese. Accordingly, cases in which the PP contains a preposition-NP-postposition sequence (e.g. 6b in 3.1.4) are assumed to bear Cantonese as the matrix code.

8. Although prepositions and conjunctions, which are bound, may be mixed as single-words in Cantonese-English, they are excluded by the bound morpheme constraint as they do not form words with the Cantonese element according to the word-formation rules of English.

9. This is based on the assumption that a hypothesized sequence containing a specifier of EC and other constituents of MC, which is ruled out by the specifier constraint, is formed by the EC grammar drawing constituents from the MC lexicon. Logically, such a hypothesized sequence can also be formed by the following route: a specifier of EC alone is drawn from the EC lexicon to occupy a specifier position of a phrase structure generated by the MC grammar. It is argued in this paper that such a route is not possible, assuming that the specifiers of EC must enter the EC grammar in order to form a phrase with other constituents. Such an assumption is not arbitrary, since the specifiers are always language-specific markers of grammatical categories, such as the English articles (i.e. NP specifiers which mark definiteness), the auxiliary verbs (i.e. VP specifiers which mark aspect) and the intensifiers (i.e. AP specifiers which mark degree). (ref. Radford 1988)

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Information on Quantifiers and Argument Structure in English Learner's Dictionaries[1]

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Abstract

Lexicographers have been arguing for the inclusion of abstract and complex grammatical information in dictionaries. The paper examines the extent to which information about quantifiers and the argument structure of verbs is encoded in English learner's dictionaries. The Oxford Advanced Learner's Dictionary (1989), the Longman Dictionary of Contemporary English (1987) and the Collin's COBUILD Dictionary of the English Language (1987) are surveyed with reference to *each*, *every*, *all* and *any*, as well as a number of dative and manner-of-speaking verbs. It is found that while most of the quantifier properties are described in the dictionaries, some properties are ignored by all of them. The dictionary information does not suffice to help learners avoid certain errors. Considerable variation is observed with respect to the argument structure of the verbs investigated. It is proposed that learnability should be an important criterion for deciding on the linguistic information to include in learner's dictionaries.

1. Introduction

In the past ten years, lexicographers have been making conscious efforts to incorporate complex and subtle grammatical information into English learner's dictionaries. It is argued, for instance, in Benson, Benson and Ilson (1986:237) that "dictionaries should make a maximum effort to provide as much pertinent grammatical information as possible." The grammatical information should not relate only to verbs, but should also cover adjectives, nouns and adverbs.

At least four kinds of suggestions have been raised with regard to how the range of grammatical information in English learner's dictionaries should be expanded. The first kind of suggestion is that underlying syntactic differences which are not reflected in the surface structure should be explained in dictionaries (cf. Benson et al 1986:232-4). Thus, the well-known difference between a tough-construction such as (1a) and a non-tough construction such as (1b) ought to be made explicit. The distinction between a verb that takes a direct object and a clausal complement, illustrated in (2a), and a verb that takes merely a clausal complement, illustrated in (2b), requires elaboration.

(1a) John is easy to please.
(1b) John is eager to please.
(2a) Paul persuaded Jim to be examined by the doctor.
(2b) Paul wanted Jim to be examined by the doctor.

Secondly, it is argued that constraints on sentence patterns should be indicated to learners. For example, both *send* and *describe* are verbs that can take direct and indirect objects, and can be followed by a noun phrase and a prepositional phrase, as in (3a) and (4a). However, it is only *send* that can occur in a double object construction, as in (3b), but not *describe*, as shown in (4b).

(3a) John sent the book to his brother.
(3b) John sent his brother the book.
(4a) John described the book to his brother.
(4b) *John described his brother the book.

The morphophonological constraint on the dative construction, which by and large restricts dative verbs to native words (cf. Green 1974, Goldsmith 1980), needs to be included in some form in dictionaries.

A third kind of concern that has been expressed is that examples used in dictionaries should reflect, as consistently and accurately as possible, the grammatical properties of lexical items in their various senses. For example, the word *common* has the sense of 'found or happening often and in many places,' as in:

(5a) Rabbits and foxes are *common* in Britain.

and the sense of 'belonging to or shared by two or more,' as in:

(5b) We share a *common* language.

Fillmore (1989) observes that these two senses of *common* are not treated consistently in the Collin's COBUILD dictionary (hereafter COBUILD). The lead clause in COBUILD is "if something is *common*, ..1.1 ... 1.2., suggesting that the word in the second sense can also occur in predicative position, which is inaccurate[2]. The 1987 edition of the Longman Dictionary of Contemporary English (hereafter LDOCE2), however, makes the difference in complement environments between *common*$_1$ and *common*$_2$ quite explicit. *common*$_1$ is attributive and predicative, while *common*$_2$ is only attributive.

Herbst (1984) has suggested in the same spirit that example sentences in dictionaries should exemplify complement environments rather than adjuncts: the complement of a verb or adjective tells the learner more about the properties of the lexical item than its adjuncts. He points out that the example sentence in the 1978 edition of the Longman Dictionary of Contemporary English for *accessible* in the sense of "easy to reach, enter or obtain" is

(6a) The island is accessible only by boat.

In this sentence, the phrase *by boat* is an adjunct. However, more useful information may be conveyed to the learner if this is replaced with a sentence like:

(6b) The island is accessible to the public.

in which the phrase *to the public* is a complement. Ferris (1990) takes note of a similar point.

Fourthly, some lexicographers (cf. Cowie 1987b; Maingay and Rundell 1987) argue that discourse and pragmatic information should also deserve a place in learner's dictionaries. Cowie (1987b:185-7) points out that some examples in the Oxford Advanced Learner's Dictionary could be improved by taking into account the discourse factor. For example, in the entry for the verb *strip*, while the example *strip the bark off a tree* is natural, *strip a tree of its bark* sounds a little odd in the sense that it violates the rule that the end-focus position is generally reserved for new information. An improvement one could make is to have instead: *strip the tree of bark*. For the same reason, Cowie considers it important to inform learners of the distinction between question/response pairs such as (7a) and (7b), the first pair being felicitous while the second is not.

(7a) What happened to your new watch?/ It was stolen.
(7b) What happened to your new watch?/ A thief stole the watch.

From the foregoing discussion, it is clear that lexicographers are not content with describing simply the surface aspects of grammar. They are advocating the inclusion of complex and subtle grammatical information in learner's dictionaries, and have been making an effort to bring to learners some of the recent findings in linguistic investigation.

The purpose of this study is to find out the extent to which syntactic and semantic information of a complex and subtle nature is provided in learner's dictionaries. The relevant data are drawn from three of the most popular learner's dictionaries: LDOCE2; the fourth edition of the Oxford Advanced Learner's Dictionary of Current English (1989, hereafter OALD4), and COBUILD. The two areas I have selected for examination are quantifiers and argument structure.

First, I would like to find out what linguistic properties of quantifiers like *all, every, each, any*, are represented in learner's dictionaries. Knowledge of quantifiers is a very abstract form of knowledge that is probably not learned from experience (cf. Hornstein 1984)[3]. Knowledge of specific quantifiers in a particular language, for instance the subtle semantic and syntactic differences between *each, every* and *all*, is hard to acquire because some of these differences could be idiosyncratic and arbitrary. Learners make a lot of errors in relation to quantifiers, as evidenced in the data in (8-12), all produced by university-level students in Hong Kong:

(8) According to the community care policy, in each districts, there should be sufficient facilities offering to the old people.
(9) My major job frustrations include preparing economic analysis for almost every important events which carry significant implications.
(10) Anyone can't help you.
(11) I ate anything for breakfast this morning.
(12) Answer each question.

What kind of information are student learners likely to get from a dictionary which tells them that *each districts* (8); *every important events* (9); *anyone can't help you* (10) are ungrammatical? Can the dictionary be of help in explaining why *answer each question* (12) sounds less natural than *answer all questions*?

Secondly, I am interested to see how information about the argument structure of certain verbs is indicated in dictionaries. I have selected two types of lexical items for illustration. One is verbs like *send*, *buy* and *recommend*. This is of interest because this class of verbs is subject to both morphophonological and semantic constraints. Can learners rely on the dictionary to find out which of these verbs can occur in the double object construction? The other type of verb is manner-of-speaking verbs such as *whisper*, *shout* and *shriek*. As a non-native speaker of English, I have often found it necessary to determine which of these verbs can be followed, for instance, by a *that*-clause complement or a nominal object. However, my experience has been that dictionaries differ considerably in how they encode the argument structure of these verbs. It would be of interest, therefore, to compare the three dictionaries in their treatment of the subcategorization properties of these lexical items.

2. Information on the quantifiers *all, every, each* and *any* in English Learner's dictionaries

2.1 Linguistic properties of *all, every, each*

Quantifiers have been a subject of intensive study in English linguistics as well as in theoretical linguistics. The following are twelve properties relevant to our discussion of the three English quantifiers in question, based on Vendler (1967), McCawley (1977), Hogg (1977) and Aldridge (1982). These are concerned with whether the quantifiers

(a) can precede singular count nouns in a noun phrase;
(b) can precede plural count nouns in a noun phrase;
(c) can precede mass nouns in a noun phrase;
(d) can be followed by a cardinal numeral in a noun phrase;
(e) can be followed by an ordinal numeral in a noun phrase;
(f) can quantify a set of two entities;
(g) can cooccur with symmetric predicates;
(h) have the availability of collective reading;
(i) can fall within the scope of negation;
(j) require the presence of another quantifier in the sentence.
(k) have pronominal status;
(l) can quantifier-float.

The first three properties (a-c) are concerned with number: whether the quantifier can cooccur with count nouns, and if it can, whether it takes singular or plural agreement. The features (d-e), which also relate to distributional properties within the noun phrase, look at the compatibility of the quantifier with ordinal and cardinal numerals.

The characteristics given in (f-j) reflect other semantic properties of the quantifiers: can the quantifier quantify sets of cardinality smaller than three? Is the quantifier consistent with symmetric predicates such as *similar*, *be alike* or *meet*? Is the quantifier able to give a collective reading referring to the totality of a set rather than its individual members? Can it fall under the scope of negation? Does the quantifier require the presence of another quantifier in the same sentence for the sentence to sound natural?

The last two properties (k-l) are purely syntactic in nature. They examine whether the quantifier can function as a pronoun in addition to being a determiner, and the range of syntactic positions it may float to in quantifying the subject of the sentence.

The above twelve features provide a framework for distinguishing between the three quantifiers *all, every* and *each.* With respect to properties (a-e), *all* can precede a plural count noun or a mass noun in a noun phrase, as in *all buses, all wood*, but not a singular count noun ("**all ball*). It can precede cardinal but not ordinal numerals. Thus the phrase *all three days* is well-formed, but not **all third years*.

In relation to the properties (f-j), *all* fails to quantify a set of two or fewer members, as reflected in the oddity of a sentence like

(13) ?Hold a book in all your hands.

However, it is compatible with symmetric predicates, as in:

(14) All the blocks are similar.

It yields a collective reading in sentences such as

(15) All the angles of the triangle equal 180 degrees.

(cf. Aldridge 1982), and it can fall within the scope of negation (e.g. *Not all linguists dance*). The quantifier can be used in a sentence without the presence of another quantifier (e.g. *Put all of these books away*).

As for properties (k-l), *all* may function as a pronoun. It is able to Q-float to auxiliary position, but not to post-object position in quantifying a subject NP. Thus, one may paraphrase (16a) as (16b) but not as (16c):

(16a) All the men bought sandwiches.
(16b) The men all bought sandwiches.
(16c) *The men bought sandwiches all.

The other two quantifiers can be examined in similar manner vis-a-vis the list of properties. In contrast to *all, every* must cooccur with singular count nouns (*every book* vs **every books* or **every wood*). It can modify both cardinal and ordinal numerals, as seen from the acceptability of *every three days* and *every third year*.

Like *all*, *every* does not quantify sets with two or fewer members (cf. *?Hold a book in every hand/every one of your hands*). Being distributive, it is not compatible with symmetric predicates. Nor does it give a collective reading. Thus sentences such as:

(17) *Every one of the blocks is similar.

are unacceptable, and a sentence such as:

(18) Every angle of the triangle equals 180 degrees.

fails to give a totality reading. *Every* may be negated: e.g. in sentences like

(19) Not every linguist dances.

Its use does not seem to require the presence of other quantifiers. The sentence

(20a) Put every one of these books away.

sounds as complete as

(20b) Put all of these books away.

Every differs from *all* in not having pronominal status and not being able to float to auxiliary or post-verbal positions in quantifying the subject of a sentence.

In terms of number properties, *each* behaves like *every* in taking singular count nouns exclusively. It modifies neither cardinal nor ordinal numerals (cf. **each three days, *each third year*).

Each may quantify sets of only two members (cf. *Hold a book in each hand*). However, it may not cooccur with symmetric predicates (e.g. **Each of the blocks is similar*), and it cannot fall within the scope of negation, as seen from examples like **Not each linguist dances*. As observed by Vendler (1967) and McCawley (1977), *each* is incomplete without other quantifiers in the sentence. For example, (21a) does not sound as natural as (21b).

(21a) ?Put each of these books away.
(21b) Put each of these books in a drawer.

Similarly,

(22a) ?Susan assisted each executive.

sounds incomplete, but becomes acceptable with the addition of another quantifier, as in

(22b) Susan assisted each executive on a different day of the week.

The use of *each* seems to require some kind of pairing of quantifiers.

Each has pronominal status, and can float to the auxiliary and post-object positions. Thus one could express the meaning of (23a) in the form of (23b) or (23c):

(23a) Each of the men bought sandwiches.
(23b) The men each bought sandwiches.
(23c) The men bought sandwiches each.

2.2 Information about *all, every* and *each* in LDOCE2, OALD4, and COBUILD

All three dictionaries provide copious information about the linguistic properties of *all, every* and *each.* In LDOCE2 and OALD4, detailed usage notes are provided to elaborate on the similarities and differences between these quantifiers. The LDOCE2 gives the following usage note on *each* and *every*:

> USAGE Compare **each** and **every.** 1 **Each** before a noun takes a singular verb. You use **each** when you are thinking of the members of a group separately, or one at a time: **Each** *pupil was given a different book by the teacher.* **Every** always takes a singular verb. You use **every** when you are thinking of a whole group, or making general statements: **Every** *boy ran in the race.*|**Every** *child likes* (=all children like) *to get presents.* 2 **Each** can be used before *of,* or after a subject, in sentences like these: **Each** *of us wants to get a share of the money....* *We* **each** *have a room of our own.* **Every** cannot be used in these positions. (LDOCE2, at *every*)

The OALD4 offers the following explanation on the same two quantifiers:

> NOTE ON USAGE: **Each** and **every** are generally used as determiners before singular countable nouns. **Each** is used when the items in a group (of two or more) are considered individually: *Each child learns at his or her own pace.* **Every** indicates that all the items in a group (of three or more) are being regarded as members of that group. .....**Each (one) of** and **every one of** come before plural nouns and pronouns, but the verb is still singular: *Each of the houses is slightly different.* ○*I bought a dozen eggs and every one of them was bad.* ○*She gave each (one) of her grandchildren 50p.* **Each** can function as a pronoun on its own: *I asked all the children and each told a different story.* It can also follow a plural subject or an indirect object with a plural verb: *We each have a different point of view.* (OALD4, at *each*)

The relevant information may be given explicitly in the form of a note, or indirectly in the form of examples showing the word in one of the contexts in which it occurs. For example, both the LDOCE2 and the OALD4 make it very clear that *each* and *every* combine generally with singular count nouns, and that *each* can float to an auxiliary position following a plural subject. However, the two dictionaries only indicate implicitly through examples that *each* requires the presence of another quantifier in the sentence. Thus all the examples contain an additional quantifier besides the *each* phrase:

(24) Each of us wants to get a share of the money. (LDOCE2)
(25) We each have a room of our own. (LDOCE2)
(26) Each child learns at his or her own pace. (OALD4)[4]
(27) Each of the houses is slightly different. (OALD4)[5]
(28) I asked all the children and each told a different story. (OALD4)
(29) We each have a different point of view. (OALD4)

Table 1 below surveys the extent to which the twelve properties of *all, each* and *every* (a-l) are indicated in the three dictionaries. Indicated in the table in square brackets are the dictionaries which have included information on the property corresponding to the quantifier concerned, either explicitly or through example sentences. In cases where the information provided is considered unclear or not explicit enough, a question mark is placed.

As can be seen from the table, the cooccurrence of the quantifiers with count or mass nouns and their number properties are described in all three dictionaries (Properties (a-c)). However, a great deal of variation is found with respect to properties (d-e), i.e. whether the quantifiers can modify cardinal and ordinal numerals.

The dictionaries indicate that *every* can modify cardinal numerals, as can be seen in the extracts below.

> **every**...2 (of things that can be counted, esp. periods of time) once in each: *He comes to see us every day/every three days.* (LDOCE2)
> **every**...3 (used to indicate regular occurrence at specified intervals) each: *The buses go every 10 minutes* **4..(b)** alternate: *They visit us every other week.* (OALD4)
> **4 Every** is used when you talk about frequency **4.1** in order to say that something happens at regular periods of time. E.G...*I visit her about once every six months.* ..**5**...If you say that something happens **every third** day, **every fourth** year, etc, you mean that it happens on one day in each period of three days, in one year in each period of four years, etc. (COBUILD)

However, only COBUILD further explains that *every* can modify ordinal numerals as well. LDOCE2 does not mention this usage, and OALD4 includes this only in the context of *every other*. None of the three dictionaries contain information on these two properties for *all* and *each*. How should learners intepret the absence of information on a lexical item? Shall they assume such cooccurence is impossible? This would obscure the difference between *all* and *each*: the former can modify cardinal numerals but not ordinal numerals, while the latter can modify neither.

Information about the size of the set quantified (Property f in Table 1) is included for *every, each*, but not for *all* in the latter's use with count nouns. As shown in the following extracts, while the LDOCE2 and the OALD4 describe this property for *every* and *each*, the COBUILD only touches on it in the entry for *every*.

> **every**..1 each (of more than two)....(LDOCE2)
> **each**..every single one of two or more things or people considered separately. (LDOCE2)
> **every**..(used with **sing** [C] *ns* to refer to groups of three or more which are seen as wholes) each individual...(OALD4)
> **each**..(used with *sing* [C] *ns* and *sing vs*)(of two or more) every (person, thing, group, etc) considered individually..(OALD4)
> **Every** is used to refer to each member of a particular group of more than two things or people...(COBUILD)

Table 1: Linguistic properties of *all, every* and *each* and learner's dictionaries which indicate these properties*

	All	*Every*	*Each*
a) $\_N_{c,sg}$	no [L,O,C?]	yes [L,O,C]	yes [L,O,C]
b) $\_N_{c,pl}$	yes [L,O,C?]	no [L,O,C]	no [L,O,C]
c) $\_N_{mass}$	yes [L,O,C?]	no [L?,O,C]	no [L?,O,C]
d) _cardinal numeral	yes	yes [L,O,C]	no
e) _ordinal numeral	no	yes [O?,C]	no
f) can quantify set of two	no	no [L,O,C]	yes [L,O]
g) compatible with symmetric predicates	yes	no	no
h) collective reading	yes [L?,O?,C?]	no [L?,O?,C?]	no [L?,O?,C?]
i) can be in scope of Neg	yes [L,O]	yes [O]	no
j) requires quantifier pairing	no	no	yes [L,O,C]
k) can function as pronoun	yes [L,O,C]	no	yes [L,O,C]
l) Q-float	yes [L,O,C]	no [L,O]	yes [L,O,C]

* The properties (a-l) correspond to the properties (a-l) discussed earlier. They are based on discussions in Vendler (1967), McCawley (1977), Hogg (1977), Aldridge (1982); N=noun, sg=singular, pl=plural, Q=quantifier, L=LDOCE2, O=OALD, C=COBUILD. *?* means the information on the relevant property is not clear in the dictionary preceding *?*. Absence of a dictionary label under a *yes* or *no* means that the dictionary does not contain information on that property.

With regard to the more subtle semantic properties (g-j), as observed earlier both the LDOCE2 and the OALD4 contain examples showing that *each* is generally used with another quantifier in the sentence (Property j). COBUILD likewise lists examples illustrating this property:

(30) She kept a card index for each child.
(31) If you have more than one employer, you will need a certificate for each one.

None of the dictionaries indicate, either explicitly or through examples, the possibility for *all* to cooccur with symmetric predicates. Nor do they tell the reader that this is not an option for *every, each* (cf. Property g).

Some degree of variation can be observed with respect to scope interaction with negation (Property i). The OALD4 indicates through examples that the quantifiers *all* and *every* can be negated (33-34). The LDOCE2 also includes this information for *all* but not for *every*, as can be seen in (32). On the other hand, COBUILD contains no such information, apparently restricted by its corpus base.

(32) Not all water is suitable for drinking. (LDOCE2)
(33) All horses are animals, but not all animals are horses.
/Some of the food has been eaten, but not all (of it). (OALD4)
(34) I couldn't hear every word of his speech. (OALD4)

While all three dictionaries contain some statements about the collectivity of *all* vs the distributivity of *each* and *every*, the information given is quite obscure, and not adequate to inform the learner about a choice in a particular context. For example, below are the definitions of the three quantifiers in COBUILD. One might think that sense 1.1 of *all* gives the totality reading of the word. However, sense 3 of *every* also says one may use the word to refer to all the members of a set, suggesting a collective reading. The example sentence for sense 3, which contains both *all* and *every*, is of no help in differentiating the two quantifiers:

(35) The crowd was of all ages and every colour.

Which quantifier should one then select in the context

___(one of) the angles of a triangle equal 180 degrees.

or in the context illustrated by (12), i.e. *Answer each question/all questions*?

> **All**: is used **1.1** when you are referring to the whole of a particular group or thing...**1.2** when you are referring to everyone or everything of a particular kind.
>
> **Every**..**1** is used to refer to each member of a particular group of more than two things or people, when you are emphasizing that you are considering them all; ...**3** **Every** is used to refer to all the members of a group of people or set of things that there may possibly be.

> **Each**...1 If you refer to each thing or each person in a group, you are referring to every member of the group and considering them as individuals... **2 each** is used to emphasize that you are referring to every individual thing or person in a group.

Further, a certain degree of circularity can be observed in the definitions. COBUILD defines *all* in terms of *every*, *every* in terms of *each*, *all*, and *each* in terms of *every*, as can be seen from the above.

The syntactic properties (k-l) are generally encoded clearly in the dictionaries. The LDOCE2 and the OALD4 say in their usage notes that *all* and *each* can come after a subject noun or pronoun, and that *every* cannot be so used. The COBUILD does this by exemplification, as in:

(36) We each have our private views about it.
(37) He offered me the tin of biscuits and my sister and I had one each.

The pronominal status of the quantifiers is also described either through examples or in usage notes.

The above survey has shown that while most of the properties of *all*, *every* and *each* are touched on in some form in the three dictionaries, the range of relevant information may vary from one dictionary to another. Further, some properties (e.g. the cooccurrence possibilities with symmetric predicates) do not receive any mention at all, and the treatment of some other features (e.g. the availability of the collective reading) may be too obscure to be of use to the learner. Despite the detailed usage notes, learners may still face difficulty in coping with the idiosyncratic properties of individual quantifiers in English.

2.3 Semantic properties of *any*

The last quantifier to be examined is *any*, which is also a difficult word for Chinese language learners of English. Linguists generally agree that there are two types of *any*. One is called free-choice *any*, as in (38a-b) (cf. Vendler 1967, Carlson 1981). Vendler argues that semantically a free choice must be available in a sentence before free-choice *any* can be licenced. For example, (38c) is not acceptable, because one cannot choose to have an attribute of an object. Similarly, (38d) sounds odd because one cannot have a choice of actions in an event that has been accomplished. However, (38a) is acceptable, because the latter sentence is irrealis. This also explains why free-choice *any* is also sanctioned by modality contexts, as in (38b).

(38a) Open any of the parcels.
(38b) Any doctor will tell you smoking is not good for your health.
(38c) *Any of these blocks is yellow.
(38d) *I opened any of the parcels

The other type of *any* is polarity-sensitive *any*. I will follow Ladusaw (1980)'s analysis that this is an existential quantifier that has to take inherent narrow scope with respect to negation[6]. In this analysis, the contrast between the two sentences in (38a) is represented by the difference between the scope representations 'There does not exist x=a novel such that I read x in the summer' and 'It is not the case that for all x=novel, I read x in the summer'. This requirement that polarity-sensitive *any* must have narrow scope with respect to negation explains why **Anyone didn't arrive* is not grammatical: *anyone* must fall within the scope of negation, but as subject of the sentence, it is located in a position that makes this impossible.

(39a) I didn't read any of the novels in the summer/
I didn't read all of the novels in the summer.
(39b) Did you read any novel?
(39c) Only John ever eats any meat for breakfast.
I hardly ever eat any meat.
(39d) If anyone ever catches on to us, we will be in trouble.
(39e) I was surprised/*sure that he would accept any favor from her.
(39f) He was ashamed/*glad to take any money.
(39g) Patrick is afraid/*eager to make anyone mad.
(39h) It is difficult/*easy to find any squid in the market.

It is well known that polarity-*any* is not only sanctioned by triggering elements such as negation, the question operator, certain adverbs, and conditional clauses (as in (39a-d)), but also by certain types of verbs and adjectives (cf. Klima 1964, Jackendoff 1972). These predicates do not need to have negative meaning at all (cf. 39e-h). The correct formulation of the condition is given by Ladusaw in terms of the semantic notion of 'downward entailment'.[7]

2.4 Information on *any* in LDOCE2, OALD4, COBUILD

It is interesting to observe that the two types of *any* are clearly demarcated in the three dictionaries. LDOCE2 lists free-choice *any* before polarity-*any*, while OALD4 and COBUILD list the polarity-sensitive *any* first.

> **any 1** every; (of more than two), no matter which: *They are all free- take any (of them) you like/ Any child would know that...They haven't arrived yet but we're expecting them at any moment.* (LDOCE2)
> **2** [usu. in questions or negatives] **a** some; even the smallest number or amount: *Have you got any money?....I admire her for her determination, but not for any other reason... I never seem to get any.....Come and see me if you have any time.* (LDOCE2)
> **any**..1 (used in negative sentences and in questions; after *if/whether*; after *hardly, never, without*, etc; and after such vs as *prevent, ban, avoid, forbid*)...(OALD4)
> **2(a)** ...one out of a number, (the particular choice being unimportant): *Take any book you like* ○ *Give me a pen- any pen will do,* ○ *Phone me any day next week.* (OALD4)
> **any** ..1 You use **any** in negative statements, questions, and conditional clauses...*She had hardly any money...It won't do any good...Were you in any danger?..It is unnecessary for me to add any comment..Discuss it with your female colleagues, if you are lucky enough to have any..* (COBUILD)

> **2** You use **any** in positive statements when you are referring to something or someone without saying exactly what, who, or which kind you mean, often because being exact is not possible or does not matter. EG *Any big tin container will do..Cars can be rented at almost any U.S. airport.* (COBUILD)

Generally the dictionaries list the relevant environments for polarity-sensitive *any*: questions, negation, conditionals, and negative adverbs. No verbs or adjectives are given as a licencing environment in LDOCE2. However, there is one example of an adjectival environment in COBUILD (ie *unnecessary*), and there is explicit mention of verbs such as *prevent, ban, avoid, forbid* (all negative in meaning) in OALD4, whose treatment of polarity-*any* is the most elaborate.

With respect to free-choice *any*, the examples include imperatives, modal contexts, and irrealis contexts. However, none of the dictionaries discuss the scope properties of *any* explicitly: the fact that polarity *any* must have inherent narrow scope with respect to negation. So learners may still be unclear about errors such as

(40) *Anyone didn't arrive.

3. Information on the argument structure of verbs

The argument structure of predicates is an important aspect of their lexical semantics. Learning the semantic property of predicates entails learning the kinds of arguments it takes, and how they map onto syntactic positions.

Do learner's dictionaries systematically encode information about argument structure? I will examine this question by looking at the entries of dative verbs and manner-of-speaking verbs.

3.1 Dative verbs

It is well known that dative verbs are subject to two types of constraints. The first constraint is a morphophonological constraint which by and large prohibits Latinate verbs from the double object environment. Thus, while *send* and *buy* can occur in the double object construction, *deliver, explain* and *recommend* cannot, being Latinate in origin.

The other constraint is primarily a semantic constraint responsible for the difference between (41a) and (41b), or the difference between (41c) and (41d).

(41a) John sent Mary a book.
(41b) ?John sent Mars a rocket.
(41c) John bought Mary a tennis racket.
(41d) *John watched Mary a television programme.
(41e) John phoned Mary a doctor.
(41f) John cooked Mary a meal.
(41g) John washed Mary some socks.

The generalization, according to Goldsmith (1980), is that the first postverbal NP in a double object construction (the indirect object) must denote the prospective possessor of the referent of the second postverbal NP (i.e. the direct object). (41b) sounds odd because Mars is a location and not a goal of the action of sending. (41c) is acceptable since Mary is the prospective possessor of a tennis racket. In (41d), John is watching the television programme on behalf of Mary, but Mary is not the prospective possessor of the television programme, hence the unacceptability of the sentence.

It should be pointed out that the constraint is not an absolute prohibition, in the sense that it can be satisfied as long as the referent of the direct object can be construed as being possessed by the referent of the indirect object in some way. For example, (41e) is acceptable even though Mary does not literally possess the doctor. But the relationship is close enough to satisfy the constraint. For the same reason, native speakers find sentences such as (41f-g) highly acceptable (cf. Allerton 1978).

The findings in Table 2 reveal how the three dictionaries treat the verbs *buy, send, recommend, explain, deliver, cook, wash* and *phone*. It is interesting to note that the three dictionaries concur in giving the double object frame for *buy, send* and *cook*. In the case of *recommend*, LDOCE2 and OALD4 specify that the verb can appear in a double object construction, but COBUILD does not provide this information.

However, none of the dictionaries say whether *explain, deliver* or *wash/phone* can occur in a double object construction. The absence of positive information is hard to interpret for the learner. While *explain/deliver* is barred from the double object environment, *wash* and *phone* are permitted, as seen from the data reported in Allerton (1978).

Table 2: Specification of the double-object
complement environment in English Learner's Dictionaries*

	LDOCE2	OALD4	COBUILD
buy	yes	yes	yes
send	yes	yes	yes
recommend	yes	yes	no
explain	no	no	no
deliver	no	no	no
cook	yes	yes	yes
wash	no	no	no
phone	no	no	no

* In this table, a *yes* means that the dictionary lists the double-object frame or gives relevant examples.

3.2 Manner-of-speaking verbs

Manner-of-speaking verbs are verbs such as *shout, shriek* or *murmur,*" which refer to "intended acts of communication by speech and describing physical characteristics of the speech act" (Zwicky 1971:223). One property of the argument structure of these verbs, according to Zwicky, is that it may have a direct object, which is either a nominal referring to the product of a speech act, or a sentential complement (*that* clause, indirect question, or infinitival construction). The question that confronts the learner is which verbs may be subcategorized for which complement environments.

To illustrate the learner's problem, let's consider the verbs *shout, whisper, shriek* and *moan*. Which of these can take a nominal object? Which can take a that-clause, an infinitival clause? These are practical issues a learner is faced with when learning how to use these verbs properly.

Table 3 below shows a great deal of variation in the three dictionaries with respect to the information they provide about the argument structure of manner-of-speaking verbs.

Table 3: Complements of manner-of-speaking verbs
specified in English Learner's dictionaries*

	LDOCE2	OALD4	COBUILD
shout	__NP __inf.clause	__*that* clause __inf. clause	__NP
whisper	__NP	__NP __*that* clause	__NP __*that* clause
shriek		__NP	__NP
moan	__*that* clause		__*that* clause

*In this table, quotation complements are excluded: for example, examples like *'Help!', he shouted.*

For *shout*, COBUILD says it can take a nominal object:

(42) He shouted an order and they halted...

LDOCE2 says it can take a nominal object or an infinitival clause as complement, as in:

(43) The crowd shouted slogans and threw stones at the police...I shouted to him to stop.

OALD4 says it can also take a *that*-clause as complement, as in:

(44) He shouted to me that the ship was sinking.

In the case of *whisper*, both OALD4 and COBUILD indicate that it can be followed by a *that*-clause or a nominal object, as in

(45a) She whispered a word in my ear.

(45b) She whispered in my ear that she wanted to go to the toilet.

However, LDOCE2 only specifies the nominal environment.

Shriek is listed only as an intransitive verb in LDOCE2. Its transitive use is, however, given in both OALD4 and COBUILD, which show examples of the verb taking a nominal object:

(46) shrieked (out) a warning (OALD4)
(47) Outside the courtroom girls shrieked abuse at the lawyers. (COBUILD)

As for *moan*, LDOCE2 and COBUILD say that it can have a *that*-clause complement, illustrated by examples such as:

(48) She's always moaning that she has too much work to do. (LDOCE2)

(49) She..moaned that her husband had abandoned her. (COBUILD)

However, OALD4 does not give any relevant information at all. The dictionary also does not remark on the semantic difference between the complement environments. It has been observed that the choice of a *that*-clause vs an infinitival clause may reflect different meanings (cf. Riddle 1975). In

(50) X shouted to him that the ship was sinking.

the event denoted by the complement occurs before the act of shouting; but in

(51) X shouted to him to shut the gate.

the act of shouting occurs before the event of shutting the gate.

Information about the inability of manner-of-speaking verbs to function as performative verbs is also missing from the dictionaries. By this property, one cannot say (52a) (as opposed to (52b)).

(52a) ?I shout that someone has committed theft.
(52b) I claim that someone has committed theft.

4. What grammatical information should be included in dictionaries?

The above survey of the treatment of quantifiers and manner-of-speaking verbs has demonstrated clearly that contemporary lexicographers have been making a conscious effort to incorporate subtle and complex semantic information into learner's dictionaries. It should also be observed that alongside this, linguists have also turned their attention to potential applications of linguistic research to lexicographic work (cf. McCawley 1986, Fillmore 1989, Levin 1991). This exchange between lexicographers and linguists should lead to a further improvement of learner's dictionaries. Some of the inadequacies and inconsistencies observed in the preceding discussion may disappear when new editions are compiled.

The question still remains, however, as to what types of grammatical information one should include in dictionaries. Some grammatical features may be relatively easy to state (e.g. Property (a-c) of *all, every* and *each*). Others are difficult to describe in simple terms (e.g. the downward entailment condition that characterizes the licencing environment for polarity-sensitive *any*). Some grammatical properties may reflect a general constraint, whereas others reflect lexical idiosyncracies.

The abstractness of the grammatical property in question should not be a hindrance, as long as it can be shown through examples. This is essentially what has been practised in the dictionaries' treatment of the 'quantifier pairing' property (j) of *each*. There is no reason why one could not extend this practice to the treatment of polarity-sensitive *any*, for instance, in giving examples of verbs and adjectives that are downward-entailing. Admittedly, it would still be difficult for learners to grasp the generalization of downward entailment, but at least learners will be led through these examples to realize that polarity-sensitive *any* is not simply triggered by certain syntactic contexts and verbs that carry negative meanings.

Learnability considerations may also be relevant. For example, should information such as the morphophonological constraint or the 'prospective possessor' constraint on dative verbs be included in dictionaries? In this connection, a distinction can be drawn between the two constraints. The morphophonological constraint is a superficial one going back to the etymological origin of the verb. The latter, however, seems to be tied to deeper semantic relations between the complement frames __NP PP and __ NP NP (cf. Gropen et al 1989). A recent study of the acquisition of the English dative by Chinese learners (Hua 1991) shows that even final-year university English majors are not entirely sensitive to the morphophonological constraint. On the other hand, intermediate learners are already aware of the semantic constraint. In view of this, one may argue that it is the morphophonological constraint that needs to be included in dictionaries. The semantic constraint seems to be something general about the grammar and need not be included at all. If this principle is adopted, then lexicographers need not worry about the inclusion of explanations on the difference between (53a) and (53b).

(53a) John bought Mary a tennis racket.
(53b) John watched Mary a television programme.

However, it would benefit the learner to include discussion of the unacceptability of

(54) *John explained me the problem.

Notes

(1) This paper is based on a presentation given at the Seminar on Lexis, held at the University of Science and Technology, July 6-7, 1992. I wish to thank participants of the workshop, as well as Elza Lam, Richard Pemberton and Gladys Tang for comments on an earlier draft of the paper. This article will also appear in R. Pemberton and E. Tsang (eds) *Studies in Lexis*. Hong Kong: University of Science and Technology.

(2) Roger Berry has pointed out to me that Fillmore's criticism is not entirely valid, since one could use *common*$_2$ in a predicative position if it is followed by a complement, as in "This stylistic feature is common to all contracts."

(3) The representation of scope requires theoretical constructs such as operators (e.g., there is a x, for all y) and variables (e.g. x, y) as well as well-formedness conditions governing the binding of variables. It seems plausible to assume that abstract constructs such as operators and variables are not learned inductively, but are part of the initial state of the child.

(4) This is an example of a pronoun functioning as a quantifier. The sentence may be paraphrased as: 'For each child x, x learns at x's own pace'. So the observation that the sentence contains an additional quantifier to the *each* phrase remains valid here.

(5) This may also seem a counter-example, but as analyzed in Keenan (1987), the semantics of *different* requires a pairing of arguments.

(6) Intuitively, an element is said to be within the scope of negation if it is part of what is negated. A sentence like "Nobody came" can be represented as 'Not (there is a x) such that x came', in which the existential quantifier falls within the scope of the negator.

(7) The reader is referred to Ladusaw (1980) for the technical formulation of the condition of downward entailment. Here, I would like to illustrate informally how the notion works with adjectives. In the following two sentences, in which the complement clauses contain noun phrases which bear subset relations to each other (cf. *a favor* vs *a small favor*), (a) entails (b). In all contexts in which (a) is true, one would expect (b) to be also true.

(a) I was surprised that he would accept a favor from her.
(b) I was surprised that he would accept a small favor from her.

This shows that *surprised* is downward-entailing and will licence *any* in the complement clause (cf. 39e). The entailment is 'downward' since the set of entities represented by *favor* in (a) is a superset of the set of entities represented by *small favor* in (b). Note that this entailment relationship does not hold for *sure*.

(c) I was sure that he would accept a favor from her.
(d) I was sure that he would accept a small favor from her.

If (c) is true, (d) may still not be true, since the speaker may be sure that he would accept some favor from her, but not sure about whether it would be a small favor or a big favor. Thus, *sure* is not downward-entailing and does not allow *any* to occur in the complement clause (cf. 39e).

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Systematic Variability: In Search of a Linguistic Explanation

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Abstract

This paper examines a specific aspect of systematic variability, which is taken to be a result of influence of linguistic context on interlanguage (IL) performance. While it is important to describe how or under what circumstances a linguistic context exerts an influence on IL development, one also needs to explain why it occurs. On the basis of an L2 study which examines the development of wh-movement in different extraction sites among a group of Chinese learners of English, we propose to analyze this type of systematic variability in terms of the typological characteristics inherent in these extraction sites. Wh-movement in English is chosen because cross-linguistic comparison reveals interesting differences between Chinese and English. The results suggest that there is internal consistency in the way learners apply wh-movement to a range of permissible contexts. It is reflected by stages of development in which the learner's initial knowledge is observed to undergo a process of reorganisation as new information about the potential contexts that permit wh-movement is gradually incorporated into his IL grammar. During this process of linguistic reorganisation, the subjects' performance is observed to vary depending on (a) which stage of IL development he is at, and (b) the internal properties of the linguistic context in which the movement rule may occur.

IL Variability

IL development is characterised by a high degree of variability, which may be described either from a horizontal or a vertical perspective, following the terminology adopted in Ellis (1989). The former refers to the variability that is evident in language use at a given point in time while the latter implies changes due to the development of IL grammar over time (i.e. order of development). Studies investigating either of these dimensions have documented that IL varies systematically, hence development is predictable (see Tarone 1988 for a comprehensive review of the issue). There are different approaches to such an investigation. It may be studied in the context of individual variation, due to different learning styles, socio-cultural variables, psychological variable..etc. Alternatively, variability may be seen as a result of cognitive processing constraints such as attention to form, degree of automatic retrieval which are implicit in the discourse domains that a task may involve. Studies adopting the first two approaches have figured most strongly in the SLA literature (Schumann 1979; Meisel et. al. 1981; Beebe and Takahashi 1989; Bialystok 1982; Hulstijn and Hulstijn 1984; Ellis 1989, to name a few). The third approach is represented by the work of Huebner (1985) or Andersen (1984) in which they examine variation within the same sample of IL of an individual speaker as well as over time. It refers to the learner's continuous effort to explore different linguistic forms, both target and non-target, to convey the same intended meaning. Adopting this framework of analysis, Andersen claims that variability reflects a "restructuring" process over time, which provides valuable sights as to the way in which the learner's IL subsystems are organised or reorganised.

There is one aspect of systematic variability which has not been given sufficient attention so far. It deals with the effect of linguistic context on IL performance, which is regarded by Ellis as one of the potential sources of systematic variability, along with situational variables. Investigation of this type of variability may be subsumed broadly under the third approach just mentioned. What is common between this and Andersen's approach is the interest in studying variability of the developing IL grammar in its own right, with the assumption that it signals restructuring in progress. Although studies that examine this issue are not many, they provide preliminary evidence regarding how the phonological, morphological or syntactic properties of the linguistic context create an effect on IL development (see Dickerson and Dickerson 1977; Gatbonton 1978; Sato 1985 for evidence in phonological acquisition; Ellis 1988; Wolfram 1989 for morphological acquisition; Hyltenstam 1978; Ellis 1984 for syntactic acquisition).

A few conclusions can be drawn from these results. As a whole, that the influence of linguistic context on systematic variability is confirmed. The production of a target variant is affected by the properties of the preceding or following linguistic structure. For instance, the production of target-like /z/ by a group of Japanese learners of English in Dickerson and Dickerson's study is more frequently observed when it is before a vowel than before a consonant. In

Wolfram's study, the nature of the verb--regular or irregular--determines the successful application of tense marking. With syntax, Ellis (1984) observes that inversion is subject to which wh-pronoun is employed. Inversion in WHAT and WHO occurs more frequently than in WHERE and WHEN. Another much quoted study is Hyltenstam (1978) in which the Swedish learners' placement of the negator systematically varies depending on whether the clause it occurs in is a main or subordinate clause. In another study by Hyltenstam (1984), inversion occurs more frequently when the finite verb is an auxiliary verb than when it is a lexical verb. Based on the results of his studies, Hyltenstam goes further to suggest that cross-sectional data on horizontal variability mirrors the process of acquisition over time. Learners acquire the structure by systematically extending their knowledge to first one environment and then another. This stimulates an important theoretical question of why, at a particular stage of development, a certain linguistic context potentially 'favours' the application of a developing rule while others do not. Is it to do with the linguistic properties of the context of rule application? Or is the learner endowed with certain learning mechanisms which enable him to perceive certain properties at specific times of his IL development? The task in the study of IL variability is two-fold. It requires a description about the way IL varies as a result of certain linguistic or situational constraints; at the same time, it seeks an explanation of such a pattern of occurrence, to find out why and under what circumstances systematic variability results. As Andersen (1989) states, "In a dynamic framework of acquisition over time, systematic variation reflects a transition from an earlier invariant state S_1 to a second later invariant state S_2." (p.47). According to him, the ideal goal of the study of variation is "to reduce variation to invariance plus principles that account for the variation". These principles in his framework of analysis are similar to the set of cognitive operating principles of the type Slobin (1985) has worked on in first language acquisition. They are said to guide learners in their perception of structural relations and to incorporate it into their IL grammar. As far as the present study is concerned, we propose to investigate what the inherent properties of not only the developing rule but also the linguistic context for rule application may offer to our understanding of variability in IL development. It is argued that the employment of a developing rule in a range of contexts should in principle reflects the typological characteristics inherent in these contexts.

An Implicational Universals Approach to the Study of Systematic Variability

Within the typological perspective, universal generalizations are derived from observing the linguistic regularities of the world's languages. For instance, the word order universal put forward by Greenberg (1966) postulates that languages with dominant VSO order are always prepositional. A particular kind of typological universals, the implicational universal, has been adopted as a working hypothesis for second language acquisition research. The statement, 'If P then Q', assumes that if property P shows up in a language, one can also predict the existence of property Q, but one would not predict the existence of P without Q. Such statement also entails a degree of markedness with these two properties, in that P is regarded as typologically more marked than Q by virtue of its less frequent co-occurrence when compared with Q. A number of SLA studies have attempted to bring the influence of certain predefined implicational universals to bear on the order of development. These studies examine the acquisition of relativization (Gass and Ad 1984, Pavesi 1986, Eckman et.al. 1988; Doughty 1991) or wh-fronting in direct questions and inversion in both yes-no questions and wh-questions (Eckman 1987). The data so far have lent support to the hypothesis that IL grammar second language development is conditioned by typological markedness and universal constraints on the structure of natural languages.

A fundamental question with this approach is whether it has psychological validity since the universals are proposed on the basis of cross-linguistic data and not of acquisition data. With the corroborative results mentioned above, Gass (1989) claims that universal constraints on the formation of natural languages are also at work during the development of a learner language, given the assumption that learner languages are natural languages and are therefore subject to the same constraints inherent in the surface linguistic facts to which the learner is also exposed. Seen in this light, where systematic variability is taken to be an integral part of IL development, the development of a structure in a range of permissible linguistic contexts should in principle be attuned to the constraints inherent in these contexts. This is based on the assumption that at any point of IL development, systematic variability is conceived as an outcome of interaction between the inherent properties of linguistic context and the processes of acquisition. The studies on the acquisition of relativization may in fact be construed as evidence for this issue. In the following study, another implicational universal will be used to examine how typological markedness serves as the basis on which systematic variability is interpreted. This universal deals with wh-movement in direct questions, with particular reference to the potential extraction sites to which it is applied. The discussion below will concentrate on how this rule operates in both English and Chinese. Where necessary, other cross-linguistic data will also be discussed.

Wh-movement in English and Chinese

In English, wh-movement plays a key role in constructions such as wh-questions, relative clauses and topicalisation where the wh-expression is moved to the clause initial position. Huang (1982) argues that wh-movement is a substantive universal which manifests itself either at the level of S-structure or logical form (LF)[1]. That is, all languages have the same semantics of questions but differ in the way it is realized syntactically. Comrie (1990) proposes three generalizations regarding the extraction phenomenon in wh-questions:(a) there is no extraction, as in Chinese (b) extraction is restricted within the clause, as in Russian, and (c) extraction occurs across clause boundaries, as in English. Since this study concerns mainly extraction within the clause, further discussion about this phenomenon is in order. A cogent description in relation to this issue is found in O'Grady (1987) in which he examines three extraction sites commonly found in languages. In general, all deals with extraction from a VP or constituents under VP. They are (a) extraction from a VP, as in (1a), (b) extraction from a PP dominated by a VP, as in 1b; and (c) extraction from a PP dominated by an NP.

1a. What did Mary [$_{VP}$ cook___]?
1b. What did the boy [$_{VP}$ hit [$_{PP}$ with___]]?
1c. Who did you [$_{VP}$ see [$_{NP}$ a picture [$_{PP}$ of___]]]?

O'Grady observes that typologically, Wh-questions in Chinese exhibit strict adherence because they do not involve wh-movement. For languages that require wh-movement, they differ in the range of extraction sites permitted. Korean allows extraction from no other phrasal categories except VPs. Dutch allows extraction from a VP or from a PP under a VP whereas French permits extraction from a VP or an NP under a VP but not from a PP. By contrast, English represents the most marked grammar since it allows extraction from all three phrasal categories. To account for such cross-linguistic variation, he has formulated a Phrase Type Hierarchy which is based on the Continuity Requirement (O'Grady 1987, p.90).

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[1] Note that Huang is adopting the GB approach to the analysis of wh-movement in Chinese questions, which is beyond the scope of the present discussion.

The Phrase Type Hierarchy:

(a) *No discontinuous constituents.*
(b) *Only VPs may be discontinuous.*
(c) *Only VPs and PPs may be discontinuous, OR only VPs and NPs may be discontinuous.*
(d) *VPs, PPs and NPs may be discontinuous.*

He further suggests that these levels occur in an implicational relationship, that is, the existence of (d) implies the existence of (c),(b) and (a), but not vice versa. Moreover, this hierarchy also implies a degree of markedness in that (c) is more marked than (b), and (d) is the most marked. Although O'Grady defines markedness in terms of the types of discontinuity permitted within the clause, it is understood that this definition is also based on his observation on typological data.

Another phenomenon in relation to (c) and (d) is preposition stranding, in which the wh-expression is extracted from a PP, leaving the preposition behind. Preposition stranding has been argued to be structurally more marked than its nonstranded counterpart, i.e. pied-piping, in which the preposition occurs along with the wh-expression in the clause initial position (c.f. With what did the boy hit? (1b)). A number of suggestions have been made to account for the markedness contrast between the two constructions[2]. In the spirit of O'Grady's analysis, stranding is more marked because in the first possibility in (c) or in (d), it leads to an additional discontinuous PP. Note that the second possibility in (c) involves pied-piping although extraction from NP is permitted, this is different from (d) where stranding is permitted within the same extraction level. Even with languages that permit stranding, restrictions are found. Van Riemsdijk and Williams (1986) observe that stranding in Dutch is limited to the so-called R-pronouns. In English, there are a number of restrictions with respect to stranding, Hornstein and Weinberg (1981) claim that where the PP is not under the governing domain of VP, such as the temporal adjuncts, stranding is normally disallowed, as shown in the following example:

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[2] In the generative framework, Hornstein & Weinberg (1981) proposes a marked syntactic rule of reanalysis, in that in the domain of VP, a V and any set of contiguous elements to its right can form a complex V, in the form of the following: V --> V* (where V c-commands all elements in V*) Applying reanalysis to absorb the preposition in 1b into the verb, the trace will be immediately c-commanded by the verb, hence properly governed. Note that reanalysis is an optional rule which applies before case marking. This syntactic rule may serve to explain the markedness contrast between 1b and 1c; reanalysis in 1b involves a preposition only whereas in 1c, it affects both an NP and a preposition.

*1d. Which month did you [$_{VP}$ learn [$_{NP}$ painting]] [$_{PP}$ during___]?

Also, stranding in 1c is said to be sensitive to lexical idiosyncrasy since a different choice of verb such as 'destroy' and 'find' causes a change of grammaticality.

1e. Who did you read/*destroy/*see a book about___?

In the context of acquiring wh-movement in English, Chinese questions will be considered as unmarked and English questions marked since Chinese questions do not require wh-movement but in English, wh-movement is obligatory[3]. During this process of acquisition, the Chinese learners' initial hypothesis may assume a no movement stage, probably as a result of L1 influence. Although they will be encountering ample positive evidence in the L2 data indicating to them that movement is obligatory in direct questions, the task of identifying those extraction sites that permit wh-movement is left entirely up to them. Moreover, when approaching a stage in which extraction from a PP is involved, they will need to sort out the fact that in English both stranded and non-stranded questions are permitted only in certain contexts and in others only one of the two options is permitted. One can hypothesize that:

(a) The learner will systematically apply the rule to the range of extraction sites in an order that reflects typological markedness, that is, extraction from a VP > extraction from a PP > extraction from a PP under an NP.

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[3] There is an exception to this rule, English allows the wh-expression to remain in situ with echo questions.

(b) Before the learner successfully applies wh-movement to each of the extraction sites, at any point of his development, non-target variants will be adopted systematically in these contexts.

The Study

Linguistic contexts

This study serves a dual purpose. Apart from verifying systematic variability in the development of the three extraction sites identified above, a more detailed analysis on the learner's development of extraction from a PP is decided upon since there involves a number of restrictions in relation to extraction from a PP. Table 3 below displays a list of linguistic contexts from which a wh-expression is extracted. The first type involves extraction of a wh-expression that is immediately dominated by a transitive VP. Types 2 to 7 involve different types of PP extraction: Type 2 involves extraction from a PP which serves as a manner adjunct under VP. Types 3 and 4 involves dative questions (To- and For-datives) where the PP is separated from the verb by its sister NP. Type 5 involves what we commonly call 'phrasal verbs' where the verb and the preposition as a whole form a natural semantic unit. Note that this context allows stranding only. Type 6 involves extraction from a PP which serves as a temporal adjunct under S and in this case only pied-piping is permitted. Type 7 concerns extraction from a PP under an NP, which represents the most marked condition.

Table 3. Types of wh-movement

Linguistic contexts	Examples	Stranding	Pied-Piping
1. Direct object of VP	Mary likes Peter very much.	---	---
2. PP dominated by VP	Mary wrote with a pencil.	yes	yes
3. PP after a sister NP (To-dative)	Tom gave a book to Mary.	yes	yes
4. PP after a sister NP (For-dative)	Mary baked a cake for Jane.	yes	yes
5. 'Phrasal verbs'	John looked after his sister.	yes	no
6. PP dominated by S	Tom has many tests before May.	no	yes
7. PP dominated by an NP	John took a picture of Mary.	yes	yes

Subjects and Task

The subjects were formal classroom learners and received instruction on English since primary 1. At the time of the study, they had already been taught English question formation at primary 4, so one could be quite safe to assume that they had developed some knowledge of wh-movement in English direct questions. Students from 5 levels of proficiency were chosen: primary 6, secondary 2,4,6 and first year undergraduates, renamed from group 1 to group 5 respectively. They were asked to do a question formation task which was written and untimed. In this task, a statement was given as stimulus. They were encouraged to produce as many questions as possible for the underlined expression in the stimulus sentence. The wh-expression was provided since this task was not concerned with its appropriate retrieval, but its syntactic movement during the formation of direct questions. A sub-class of wh-expressions were included, they were mainly WHO and WHAT, plus one or two WHICH MONTH and WHEN questions. There were 3 tokens for each context, making up a total of 21 responses. The items included in this task may be found in Appendix A. A group of native speakers was later recruited for comparison. To assess the learners' performance, one score was given to the successful application of each of the following process: wh-movement, stranding and pied-piping. Therefore, the total score of the contexts will range from one to three depending on whether one or more than one process are employed by the learner.

Results

Variability in the application of wh-movement in different linguistic contexts

The results in this section deals with whether the learners' application of wh-movement systematically varies according to the linguistic contexts identified; and whether such variability reflects typological markedness on the formation of IL. Table 4 summarizes the general performance of the learners according to their proficiency level.

Table 4: Development of wh-movement in different linguistic contexts

			TYPES OF LINGUISTIC CONTEXT						
Level	N	TOTAL	1	2	3	4	5	6	7
One	38	38.37	72.80	40.64	19.00	20.76	60.08	28.94	20.17
Two	40	42.98	76.66	45.00	21.11	25.55	62.08	36.25	19.58
Three	39	56.70	89.74	53.84	40.45	44.72	85.47	39.74	33.33
Four	24	74.75	100.00	68.05	68.05	68.51	98.61	43.75	63.19
Five	34	80.59	100.00	74.18	78.75	80.39	96.56	58.82	62.74
Average:		56.78	86.47	54.85	42.60	45.33	78.57	40.85	37.14
Nat.speakers			100.00	98.74	100.00	100.00	100.00	97.50	94.44

In general, wh-movement in English direct questions is acquired first before other rules such as SV-inversion. Where extraction involves a PP, stranding predominates the data and appears a lot earlier than pied-piping, which is not observed until Level 4. From the results, the application of wh-movement is most successful the wh-expression is extracted directly from a transitive VP (Type 1). Another context favoured by the learners initially is the phrasal verbs (Type 5). Slightly poorer performance is found with Type 2 (i.e. extraction from a PP under a VP). With the other four types of wh-movement, performance is consistently far below average, except for the advanced learners (Level five). Among them, extraction from a PP dominated by an NP is consistently the most difficult. Another context which poses problems is extraction from a PP under S (Type 6). Between these two groups are the dative questions (i.e. extraction from a PP which is separated from its head V by a sister NP). The mean scores thus provide some preliminary suggestions that the learners' performance on wh-movement systematically varies depending on the type of context to which the rule is applied. Such variability is generally observed either within each proficiency level or across all levels, reflecting both horizontal and vertical variability.

Next, we test whether their application of wh-movement between these contexts is statistically significant. In the following analysis, subjects from all five levels are collapsed to form one population. The procedure Manova with repeated measure in SPSSx is used. The results as shown in Table 5 suggest that the subjects' performance is significant (F=222.02, p=.000). Post hoc Scheffe tests are used to examine significant interactions between the extraction sites. The results are presented in Table 6.

Table 5. Manova analysis on Wh-movement (within subject effect)

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN CELLS	317132.92	1218	303.77		
WH-MOVEMENT	404653.52	6	67442.25	222.02	.000

Table 6. Scheffe tests on significant interactions between extraction sites

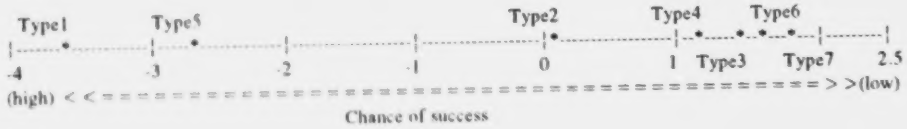
		Type 7	Type 6	Type 3	Type 4	Type 2	Type 5	Type 1
Cell means		37.14	40.85	42.60	45.33	54.85	78.57	86.74
Cell totals		6499.50	7148.75	7455.00	7932.75	9598.75	13749.75	15179.50
Type 7	6499.50	0	649.25	955.50	1433.25*	3099.25*	7250.25*	8680.00*
Type 6	7148.75		0	306.25	784.00	2450.00*	6601.00*	8030.75*
Type 3	7455.00			0	477.75	2143.75*	6294.75*	7724.50*
Type 4	7932.75				0	1666.00*	5817.00*	7246.75*
Type 2	9598.75					0	4151.00*	5580.75*
Type 5	13749.75						0	1429.75*
Type 1	15179.50							0

df =1044 N = 175 MSE = 303.77 k-1 = 7 F crit = 2.05 p = 0.05
F s = 14.35 t'crit = 1235.19 *p = 0.05

In Table 6, the asterisks indicate significant interactions between the contexts being compared (t'crit=1235.19, p<0.05). One can divide these contexts into two groups for statistical comparison: Types 1, 5 and 2 vs Types 4, 3, 6, and 7. Performance between them is significantly different, suggesting that wh-movement develops first in contexts 1, 5 and 2 before the other four. It seems that reanalysing the preposition to the verb to form a 'non-decomposable' semantic unit like Type 5 has a significantly positive effect on the learner's development of wh-movement in this context. Another factor which may contribute to better performance is the fact that this context uniquely requires stranding, which seems to be readily perceived by these learners. On the contrary, there are few significant interactions between the extraction sites starting from Type 4 downwards. Unlike Type 5, Type 6 which uniquely requires pied-piping is not preferred by the learners. It is also interesting to note that even though the NP in Types 3 and 4 is not a discontinuous constituent, similar to Type 7, its presence does not encourage the application of Wh-movement initially. However, comparing the learners' development of Type 3/4 and Type 7 over time (see mean scores in Table 4), an apparent preference for Type 3/4 may be found as proficiency improves. It suggests that they are capable of distinguishing eventually the syntactic properties of the VPs between these contexts.

The last step of the analysis is to set up an implicational scale in terms of the application of wh-movement in the linguistic contexts under investigation. The rasch analysis is used for this purpose[4]. The scale is constructed with the difficulty estimate (in terms of logits) assigned to each of the raw scores in the analysis (see Table 1 in Appendix B). The reliability index for scaling the 175 subjects and the 21 items are 0.959 and 0.999 respectively, indicating that the implicational scale established below can be taken as a reliable measure of the subjects' application of wh-movement in the types of contexts identified.

Table 8. An implicational scale of the application of wh-movement in different linguistic contexts


Type1
Type5
Type2
Type4
Type6
-4
-3
-2
-1
0
1
Type3
Type7
2.5
(high) < < = > >(low)
Chance of success

Type 1 which involves extraction from only one constituent such as the VP ranks the highest. This is followed by those contexts which involves two discontinuous constituents (i.e. VP and PP), among which

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[4] The rasch analysis provides a more objective analysis that predicts, probabilistically, what will happen when a person with a given level of ability meets a test item with given characteristics. Similar to Guttman's Implicational Scaling, the ability of people and difficulty of the item are plotted on the same scale. However, the rasch analysis allows us to get round the problem of selecting an artificial cut-off point to determine whether a structure is acquired or not. In sum, the rasch analysis provides a picture of the learner's development by maintaining an implicational relationship built upon his chance of success between the grammatical categories being scaled. A fuller explanation of this model is found in and Alaistair and Tang (1993).

Type 5 ranks a lot higher than the others. Type 7 which involves three discontinuous constituents ranks the lowest. Using the results here, one can predict, with a certain level of confidence that, the learner's success in applying wh-movement to the Type 6 context implies success in other contexts down the scale but not Type 7. In sum, this scale as presented confirms our hypothesis that the application of wh-movement to a range of permissible linguistic contexts can be predicted on the basis of typological markedness. Wh-movement is more frequently applied to extraction from an VP before extraction from a PP; and extraction from a PP dominated by an NP is the least favourable context of rule application. In other words, there are more successful instances of the less marked contexts than the more marked and success in extracting the wh-expression from an NP should in principle imply equal if not more successful application of this rule in the contexts down the hierarchy, as suggested by the "quantitative prediction" of Hawkins (1987). Hyltenstam (1984) suggests that implicational scaling based on cross-sectional data should reflect the process of acquisition over time; that is, horizontal variability should in principle reflect vertical variability (i.e. acquisition over time). The scale established here, which is based on the performance of individual subjects from 5 levels of proficiency, will represent stages or ways in which they reorganize their IL grammar in face of the potential contexts for rule development.

The co-occurrence of non-target variants

The results above generally reveal that a rule is not acquired in a wholesale fashion, but involves stages in which it is systematically applied across a range of permissible linguistic contexts. During this process of development, the data suggest the learners were conservative upon encountering new linguistic contexts. Without sufficient knowledge, they resorted to certain non-target constructions in their production. Table 7 below presents the percentage scores of three most prominent constructions. They may be regarded as non-target variants as opposed to the target preposed questions by virtue of the finding that they were consistently employed by the learners to overcome the difficulty in rule application at different stages of IL development. Where the wh-expression was an argument of the preposition under the governing domain of VP, the learners tended to retain the wh-expression in situ initially, leading to the co-occurrence of preposed and unpreposed questions in their production. That wh-movement became a variable rule was most prominent at Levels 1 and 2. Although wh-in-situ questions are permitted under special circumstances in English, what these learners have not yet developed is knowledge that, pragmatically, the meaning of the resultant echo questions differs from that of direct questions. In addition, we also observe that the more marked the context is, the more frequent it is for unpreposed questions to occur and this phenomenon is consistent across all levels of proficiency. For instance, Type 7 and to some extent Type 3 and 4 received the highest percentage scores regarding unpreposed questions at Level 1 and they also represented the last contexts for this non-target variant to get deleted. It is worth mentioning that wh-in-situ questions seldom occurred when the wh-expression was an adverbial (i.e.Type 6) and it was the first context for the learners to drop this incorrect hypothesis, almost as early as Level 2.

Table 7. Non-target constructions in IL performance

		Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
Level 1	No movt.	3.51	4.39	14.04	14.04	12.28	1.32	14.84
	Sub. Q.	19.30	16.67	49.12	48.25	27.19	0.00	48.68
	No prep.	----	12.28	11.40	6.14	2.63	21.05	7.89
Level 2	No movt.	1.66	3.51	6.14	5.26	3.51	0.63	5.26
	Sub. Q.	23.68	24.56	81.58	75.44	50.00	0.00	76.32
	No prep.	----	8.77	7.89	3.51	4.39	55.26	9.21
Level 3	No movt.	0.00	0.00	1.75	0.00	0.00	0.00	3.95
	Sub. Q.	11.40	15.79	34.21	29.82	17.54	0.00	31.58
	No prep.	----	5.26	8.42	9.65	0.00	71.05	15.79
Level 4	No movt.	0.00	0.88	0.00	0.00	0.00	0.00	0.00
	Sub. Q.	0.00	1.32	4.39	3.51	0.88	0.00	7.89
	No prep.	----	0.88	0.88	0.00	0.00	43.42	1.32
Level 5	No movt.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub. Q.	0.00	0.00	0.00	0.88	0.00	0.00	0.88
	No prep.	----	0.00	2.63	0.88	0.00	28.95	1.32

The second non-target variant is related to their avoidance of object extraction (Type 6 which involves extraction from a temporal adjuncts is irrelevant in this discussion). There seems to be a tendency for initial learners to produce subject questions although all items in the task required object extraction (e.g. Who gave a book to Mary?). In fact, from the data, most of these subjects were capable of extracting some object NPs on the same occasion (e.g. What the boy jumped over?, indicating that they understood the requirement of the task. Similar to the wh-in-situ variant, the typologically more marked context generally reveals a higher rate of occurrence of subject questions across all levels. Moreover, there appears to be a relationship between the occurrence of unpreposed questions and subject questions especially during the initial stage of IL development. As shown in Table 7 above, an upsurge of subject questions was observed at level 2 when the learners gradually dropped the no movement hypothesis. This learning phenomenon is seldom documented in the SLA literature and to what extent it is a result of L1 influence or of some other sources is subject to further investigation.

Where wh-movement is applied to the contexts in which a PP is involved, the learners were observed to delete the preposition systematically in these contexts, leading to the production of inappropriate questions on some occasions (e.g. What Mary drew? vs What did Mary draw with? or Which month they have many tests? vs After month months will they have many tests?) or ungrammatical questions on some others (e.g. Who John wrote a song? vs Who did John write a song for?). This phenomenon has also been noted in Bardovi-Harlig (1986) and in a recent study by Wolfe Quintero (1992). Both suggest that this "no-prep" stage may constitute the first stage of acquisition of prep-stranding in English direct questions. As shown in Table 7, deletion of the preposition was most prominent in the Type 6 context which requires pied-piping only. Also observed in this context were instances of stranded questions in the data (32.87% for Level 1, 15% for Level 2 and 2.5% for Level 3), or, with one item, some learners simply replaced the already provided WHICH MONTH by WHEN, hence simplifying the structure of the interrogative phrase. On the other hand, in the "phrasal verb" context, the rate of deletion was comparatively much lower than the other contexts and the first sign of overcoming this difficulty appeared as early as Level 2. It seems that, during subsequent development, the learners do not necessarily perceive the phrasal verb context to be different from the transitive VP context, regarding both the verb and the complex verb as a "natural predicate" for their NP argument.

Discussion and Conclusion

The study has presented data in support of the hypothesis that systematic variability can be explained by a theory of markedness defined in terms of typological characteristics of the world's languages. Linguistics contexts that are typologically less marked will encourage the successful application of a developing IL rule earlier than those that are more marked. If variability reflects the underlying restructuring process of IL grammar, as suggested by Andersen, the present study suggests that it involves a series of testing of hypothesis on the linguistic contexts that potentially permit wh-movement. As new information is incorporated into the IL grammar, it triggers a series of structural changes of the internal rule subsystem. An outcome of this process of rule reorganisation is reflected by the learners' adopting both target and non-target variants in his IL performance. From the data, along with target preposed questions, other non-target constructions such as unpreposed questions, subject questions and the deletion of the preposition are consistently adopted by the learners especially during the initial stages of development. The results also suggest that the choice of one variant over the other is determined not only by the current state of IL grammar, but also by the inherent properties of the linguistic context.

However, there are a few caveats which deserve some discussion here. By positing an implicational order of rule application, we seem to suggest that, on the basis of this order, one can identify discrete stages of IL development progressing from the unmarked to the marked. To recall, the data collected are from a cross-section sample of Chinese learners of English, which is different from observing individual learner development longitudinally, with a view to eliciting when and how a form begins to emerge in his production. As Hawkins (1987) suggests, implicational universals stated in the form "if P then Q" is not as straightforward as it appears when it comes to predict language acquisition, both first and second. By acquisition, he refers to the first successful production and comprehension instances of the grammatical properties mentioned in an implicational universal. For instance, in terms of the "order of acquisition prediction" (Hawkins 1987, p. 457), implicational universals do not specifically predict that the acquisition of Q must necessarily precede P. All they say is that Q may either precede P or simultaneously with P but P will not be acquired before Q. Therefore, what the present study may confirm is that the typologically more marked contexts for wh-movement are not acquired before the less marked contexts; but in no way can it suggest that the relevant rule will emerge in the less marked context before or at the same time as the more marked in their production. A longitudinal observation on individual learners' development may yield more fruitful analysis of vertical variability. Nevertheless, we do observe a counter example of this implicational universal as predictors of second language development, in that stranding, which is typologically more marked, was consistently produced before pied-piping. This finding corroborates previous studies on the acquisition of preposition stranding (Bardovi-Harlig 1986, White 1989). Bardovi-Harlig attributes this to the salience of stranding in the input data, hence readily perceived by the learners.

Perceptual salience has also been adopted to account for the exceptional behaviour of the genitive relative clauses in a number of studies that examine IL development in terms of the NP Accessibility Hierarchy. As far as the present study is concerned, the salience of stranding may be further enhanced by a pedagogical effect. The teachers involved in the present study were interviewed after the experiment. All agreed that although pied-piping sounded formal, it was structurally "more complicated" than stranding. Some even claimed that they would postpone introducing pied-piping to their students until very late or would leave the students to discover this process by themselves.

The second caveat is related to the universal in question. So far, few explanations have been advanced to explain why a universal becomes a universal or how the related universal constraints influence the formation of natural languages, or the interlanguage in this case. To explain the learnability of wh-extraction by Japanese learners of English, Wolfe Quintero (1992) argues that two types of principles are involved: language principles and learning principles. Language principles provide information about language structure while learning principles provide the strategies necessary to interpret and represent specific target langauge structure a learner is exposed to. Some of the learning principles suggested by O'Grady are conservatism, cumulative development and continuity. Taking these principles as a whole, learners are claimed to have an initial preference for structural continuity and their hypothesis will be the most conservative possible even if a more marked hypothesis is consistent with the input data. At the same time, development proceeds in stages and unfolds in increments, beginning from the least marked possible hypothesis. The results of the present study have provided some preliminary evidence that IL development may be seen as an outcome of the interaction between these learning principles and the typological characteristics of the world's languages. The principle of conservatism, for instance, may allow the learner to perceive the typologically least marked hypothesis before proceeding to the more marked contexts. In explaining language or typological universals, Hawkins (1988) claims they may involve mutual interaction between semantic, processing, cognitive and innateness principles. Taking processing as a plausible explanation, Hawkins claims that "processing difficulty is a gradient notion, with empirical consequences for language frequencies and implicationally defined co-occurrences of properties." In other words, the degree of processing difficulty will be reflected in the relative number of languages exemplifying the structure in question. He argues that it is possible that processing preferences join with other explanatory principles in shaping the structural options that a grammar can choose from. Seen in this light, one would wonder whether processing difficulty could explain the acquisition data as presented in the study. The results here seem to suggest that level of embedding may explain some but not all of the findings. One could argue that extraction from a transitive VP is less marked relative to extraction from a PP because the latter consists of two levels of embedding, hence creating more difficulty in processing such data in the input. Extraction from a PP dominated by an NP will be the most difficult to process since three levels of embedding are involved. However, it is also worth pointing out that level of embedding may not be the only factor constraining the systematic application of wh-movement to these contexts. The data suggest that even within the same level of embedding, there is a great deal of variation in the learners' performance. This can be exemplified by the learners' performance on the extraction of a wh-expression from a PP. To recall, there is a big gap between the development of wh-movement in the phrasal verb contexts and dative contexts, implying that level of embedding may not be the only constraint governing the reorganization of this IL rule, or the learners should attain equal success in applying the rule in these contexts. We are still a long way from having a clear explanation of the effect brought about by linguistic context. Further research are necessary to determine how universal constraints on the formation of natural languages will create similar effects on IL development; and more importantly, to what extent they interact with the learning principles to enable the learner to set up relevant hypotheses during the course of development.

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Appendix A

The list of items used in the written test.

1. Mary danced with Peter. (who)
4. Mary likes Peter very much. (who)
6. Tom gave a book to Mary. (who)
8. Peter found a dog in the box. (what)
9. Peter has been sleeping since this morning. (when)
10. Mary looked for her mother. (who)
12. Mary baked a cake for Peter. (who)
13. The boy jumped over the gate. (what)
14. Mary passed a key to Jane. (who)
16. John looked after his sister yesterday. (who)
17. They have many tests after July. (which month)
18. John took a picture of Mary. (who)
20. John wrote a song for Mary. (who)
22. Mary drew with a pencil. (what)
24. Peter turned on the radio. (what)
25. John found a photo of Mary. (who)
26. Mary made a doll for Jane. (who)
27. Peter kicked the ball. (what)
28. John lent a book to Peter. (who)

Distractors

5. The story is about a cat. (what)
2. Yes, he killed a very long snake.
3. John is going to the zoo. (where)
19. Mary is from Hong Kong. (where)
15. Yes, Mary works every day.
21. Yes, Peter can drive very fast.
11. Mary is good at singing. (what)

Appendix B

Table 1. Estimates of the test items based on the rasch analysis

	Type1	Type2	Type3	Type4	Type5	Type6	Type7
Wh-movt	-0.46	0.51	-0.01	-0.57	-1.52	-0.23	-0.18
	-6.05	-4.59	-0.46	-0.46	-0.69	-2.02	-0.76
	-4.42	-4.59	-0.29	-0.18	-4.59		
Mean:	-3.64	-2.89	-0.25	-0.40	-2.27	-1.12	-0.29
Stranding	----	0.95	1.23	0.20	-1.28	----	1.45
	----	-3.54	0.81	0.62	-0.57	----	1.67
	----	-2.48	0.95	1.05	-3.86	----	
Mean:		-2.32	0.99	0.62	-3.14		1.56
Pied-piping	----	4.13	3.92	3.55	5.02	3.99	----
	----	6.69	3.85	3.55	3.99	4.36	----
	----	4.91	3.55	3.49	----	----	----
Mean:		5.24	3.77	3.53	4.51	4.17	----
Grand mean:	-3.64	0.01	1.51	1.25	-2.703	1.69	1.81

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Aspect Licensing and Verb Movement in Mandarin Chinese

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[Abstract] An inquiry into the internal structure of Infl has led to the view in the generative grammar that universally the head of the I(nfl)P(hrase) is decompositional in that a series of functional categories can be located there, e.g. T(ense)P(hrase), Agr(eement)P(hrase), Neg(ation)P(hrase), Asp(ect)P(hrase), etc.; each of these categories projects its own Spec and head (Pollock 1989, among many others) and the order of these phrasal categories is parametrically determined (Ouhalla 1990). A natural question arises as to how this view is reflected in the Chinese Infl. In this paper we focus our attention on the aspect makers, i.e. the verbal particles *-zhe*, *- le*, and *-guo* in Mandarin Chinese and discuss the properties of the Chinese Infl with respect to aspect licensing. Our investigation indicates that neither verb raising to Infl (Asp°) nor Infl (Asp°) lowering to V takes place in the overt syntax. The analysis that we propose is that aspect markers in Chinese are base-generated as verbal suffixes; they are licensed at the level of L(ogical)F(orm) via movement of the verbal complex [V+Asp] to the functional head Asp°.

1. Introduction

Recently, it has been assumed in the GB (Government and Binding) literature that the I(nfl)P(hrase) can be further decomposed into a series of functional projections (Pollock 1989; Laka 1990; Ouhalla 1990, and Chomsky 1991, among others)[1], for instance, T(ense)P, Agr(eement)P, Mod(al)P, Neg(ation)P, Asp(ect)P, etc., and each of these categories projects its own Spec and head. The universal ordering of these functional projections has been proposed on parametric basis, for example, the Neg Parameter postulated in Ouhalla (1990) states that Neg can select VP or Neg can select TP. In comparison with languages possessing rich inflectional morphological systems, Chinese is a language which has a meager Infl. The internal structure of Infl in Chinese is relatively simple. It is generally agreed that there are no overt agreement and tense morphologies in Chinese.[2] Even modals are taken to be non-Infl constituents (Lin & Tang 1991).[3] The only categories available are Aspect, and Negation.[4] In this paper, we discuss how the features in the AspP are licensed in Chinese. The issues are centered on whether overt verb movement to Asp° or Asp° lowering to the verb followed by successive verb raising to Asp° at L(ogical)F(orm) takes place in the syntax, if aspect markers in Chinese are taken be Infl elements. The result of our discussion shows that neither possibility exists in Chinese. The plausible solution is that aspect markers, not being Infl elements, are verbal suffixes in the base; aspect licensing is implemented via head movement of the verb to Asp° at LF in the manner of feature checking. Our analysis is supported by independent evidence derived from Gu (1992b) and is also confirmed by the proposal that the Chinese Infl is morphologically vacant (Huang 1991; 1992) so that verbs in general do not move overtly to adjoin to Infl.

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[1] The works of Pollock and Chomsky are widely circulated in manuscript forms prior to publication.

[2] It remains to be determined whether Chinese allows a morphologically empty TP. In other words, TP, as a functional category, may still project in the Chinese syntax despite its morphological status. We leave this issue open here.

[3] Lin and Tang argue that modals in Chinese are verb/adjective-like and therefore have independent main predicate status; they take CP complements so that they project their own argument structures of a sentence.

[4] For instance, as argued in Gu (1992a) and Ernst (1992).

The paper is organized as follows. In section 2, the basic structure of the Chinese AspP is outlined. In section 3, the problems derived from both verb raising and Infl lowering are discussed, and the proposed analysis is sketched out. The plausibility of the morphologically empty Infl of Chinese is laid out in section 4, accompanied by a discussion of how it is related to the proposed analysis. A conclusion is drawn in section 5.

2. The AspP

In Chinese, aspectual marking of finite verbs are instantiated by three particles in the forms of V+*le* (了) (perfective), V+*zhe* (著) (durative), and V+*guo* (過) (perfective/experiential). Relevant examples are given in (1) - (3), respectively.

(1) ta kan-le yi-ben shu.
he look-Asp one-CL book
他看了一本書。
'He has read a book.'

(2) ta zheng kan-zhe yi-ben shu.
he just look-Asp one-CL book
他正看著一本書。
'He is reading a book.'/'He is looking at a book.'

(3) ta kan-guo yi-ben shu.
he look-Asp one-CL book
他看過一本書。
'He has read a book.'

Traditionally, these three particles are treated uniformly as functional words, and they are referred to in the literature of Chinese linguistics as aspect markers (Li & Thompson 1981; Smith 1991, among others). But the two perfective markers, *le* and *guo* are syntactically different in that *guo* can only attach to a verb stem, whereas *le* can attach either to a verb stem or to a complex, i.e. [V+*guo*]:

(4) ta yijing kan-guo-le nei-ben shu le.
he already read-Asp-Asp that-CL book Asp
他已經看過了那本書了。
'He has already read that book.'

A distinction between *le* and *guo* is made by Zhou (1990). The proposal is that *guo* may be construed as a derivational morpheme because of its lexical productivity in forming compounds like *chuanguo* (穿過) 'pass through', *jingguo* (經過) 'pass by', etc., while *le* and *zhe* be treated as inflectional morphemes. Under Zhou's assumptions, *le* in (1) and *zhe* in (2) are construed as elements dominated by the AspP; *guo*, being a lexical morpheme, is not an Asp° element, but part of a lexical item whose derivation is confined only to the lexicon.

This assumption does not seem to be plausible, however. As we will show later in the discussion, *le* and *zhe* are not inflectional morphemes. Furthermore, the aspectual property of *guo* is obvious in (3) and (4). Intuitively, the string of *kanguo* (看過) is not a compound, but only a verb plus an aspect marker. The correct assumption is that there are two instances of *guo* in Chinese. One is a verb, meaning 'spend' (sometime), as in *ta guo-le yi-ge yukuaide shengri* (他過了一個愉快的生日。) 'He's had/spent a happy birthday.' The other is a perfective/experiential aspect marker. With respect to the ordering fact observed in (4), one plausible solution seems to be that the two aspect markers, *le* and *guo*, may be licensed under different heads. Based on the Mirror Principle (in the spirit of Baker 1985)[5] in functional projection and morphological realization (Speas 1991), it can be postulated that *le* is licensed under the head of AspP which embeds another AspP under whose head *guo* is licensed. As an approximation, we propose the following representation for the projection of the double AspP.[6] Since *zhe* does not co-occur with other aspect markers, by assumption, it is projected under a single AspP.

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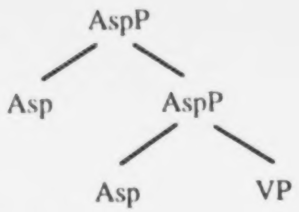
[5] The Mirror Principle introduced in Baker (1985) captures the isomorphic process of syntactic derivations and morphological derivations. As informally stated in Baker (p.375 (4)), the principle requires that morphological derivations must directly reflect syntactic derivations (and vice versa). For further developments of the Mirror Principle, interested readers are referred to Grimshaw (1986), and Speas (1991).

[6] As we will propose later, in Chinese the AspP does not project its head and Spec morphologically. But either there are features in Asp° which need to be licensed or Asp° is a

(5)



The concept of licensing will become clearer as our discussion proceeds. Among the three aspect markers, we will focus our attention on the perfective marker *le*.

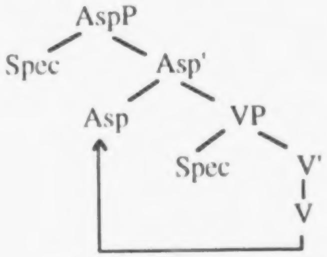
3. Aspect Licensing

Following Pollock (1989) and Chomsky (1991), based on the work of Emonds (1978), there are two possible derivations for the aspect marker *le* in the sentence in (6): i) the verb moves up to Asp via head movement and adjoin to *le* at S-structure; ii) *le* lowers to the verb at S-structure and then the verb complex, i.e. [V+Asp] moves up to the head of AspP at LF (Logical Form) in order to form a proper chain (Chomsky 1991).

(6) Zhangsan xie-le yi-feng xin.
Zhangsan write-Asp one-CL letter
張三寫了一封信。
'Zhangsan wrote a letter.'

(7) illustrates these two derivations.

(7) a.



S-structure Movement

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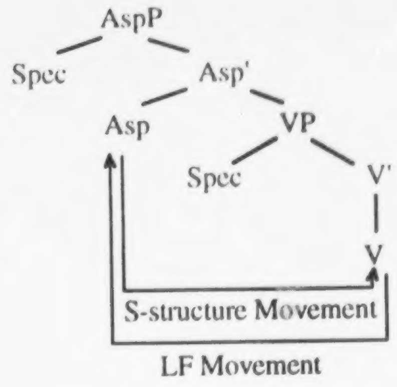
feature checking domain for aspectual suffixes. In neither case, however, is the Spec position relevant.

b.



In (7b), without the second step of movement, the chain resulting from the first step of movement will contain (*t* , ..., Asp), and when Asp is adjoined to V at S-structure to form a verb complex [V+Asp], the trace of Asp c-commands the verb complex, constituting an illegitimate chain. To create a proper chain, Chomsky argues that at LF, the verb complex must subsequently raise to the position of *t*, thereby eliminating the initial trace and the improper chain.[7]

The first possibility is not available in Chinese as contrasted by the word order facts in (8a) and (8b); verb raising to Infl (Asp°) has crossed the VP licensed manner adverb (see for example, Sportiche 1988; Pollock 1989, and see Bowers 1988, 1991 for an alternative analysis), giving rise to the ill-formed (8b). This provides evidence that no overt verb raising to Asp° is allowed in Chinese.

(8) a. Zhangsan hen kuaide xie-le yi-feng xin.
Zhangsan very quickly write-Asp one-CL letter
張三很快地寫了一封信。
'Zhangsan quickly wrote a letter.'
b. * Zhangsan xie-le hen kuaide yi-feng xin.
Zhangsan write-Asp very quickly one-CL letter
* 張三寫了很快地一封信。
* 'Zhangsan wrote quickly a letter.'

Given (8), it may seem possible that Chinese has movement of aspect to verb instead of verb raising to aspect. This possibility has been assumed by a number of linguists (for instance, Cheng 1989; Zhou 1990; Tang 1990b, and Cheng & Li 1991), that is, in Chinese, aspect licensing is implemented via Asp lowering to the verb at S-Structure, and then the complex [V+Asp] raises back to Asp° at LF to satisfy the proper chain condition.

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[7] It is pointed out in Chomsky (1991) that the lowering process is normally not permitted if a raising option is also available. The spirit of such a constraint is to minimize the cost of derivation, i.e. shorter derivations are always chosen over longer ones.

In our investigation (Gu 1992b) into the verb internal measure phrases in Chinese, we find evidence which shows that the second possibility does not exist in Chinese either. To illustrate our findings, let us digress on the analysis a little bit.

In Chinese, there exists a type of verbal measure phrases, traditionally referred to as *dong liang ci* (動量詞), 'measure phrases of verbs'. These measure phrases occur as the internal indirect objects of verbs, for instance, *yi yan* (一眼) 'one glance' in *kan yi yan* (看一眼) 'take a glance', and *yi jiao* (一腳) 'one kick' in *ti yi jiao* (踢一腳) 'kick a kick. Under our analysis, these measur phrases are cognate object of the verb (in the spirit of Larson 1988b) and they are projected in the syntax by the semantic specification of event quantification. Being an internal indirect object, the measure phrase is located in the complement position of a verb. Some examples are given in (9).

(9) a. Zhangsan ti-le neì-ge ren yi jiao.
Zhangsan kick-Asp that-CL person one foot
張三踢了那個人一腳。
'Zhangsan gave that man a kick.'

b. Lisi kan-le nei-ge ren yi yan.
Lisi look-Asp that-CL person one glance
李四看了那個人一眼。
'Lisi took a glance at that man.'

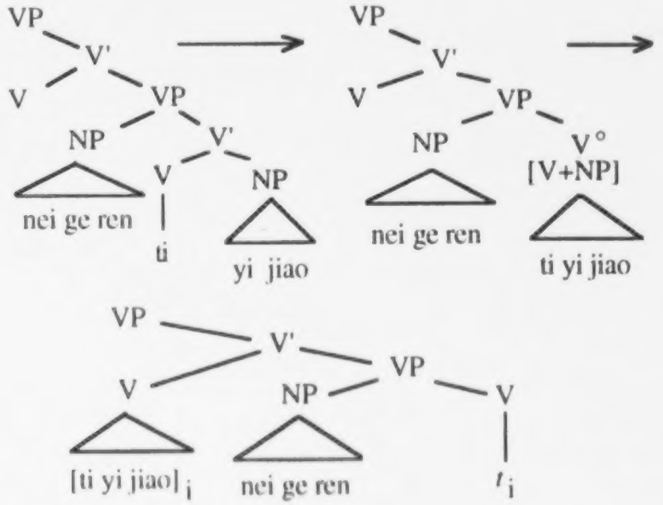
There are cases where the measure phrases can alternate with the direct object, as exemplified in (10).

(10) a. Zhangsan ti-le yi jiao nei-ge ren.
Zhangsan kick-Asp one foot that-CL person
張三踢了一腳那個人。
'Zhangsan gave that man a kick.'

b. Lisi kan-le yi yan nei-ge ren.
Lisi look-Asp one glance that-CL person
李四看了一眼那個人。
'Lisi took a glance at that man.'

To account for this alternating pattern, we have proposed, following Larson (1988a & b), that the verb and its cognate object be optionally reanalyzed into a V°. The sentences in (10) indicate that reanalysis has applied whereas in (9) it does not apply. The structural representations (11) and (12) below show in partial the two derivations subsumed under verb movement, respectively.[8] In (11), based on (10a), after the application of reanalysis, the newly formed V°, i.e. [V+NP], moves up to the head position of the higher VP to theta-and Case-mark the direct object *nei ge ren* (那個人) 'that man', giving rise to the surface form *ti yi jiao nei ge ren* (踢一腳那個人) 'kick one kick that man' in (10a).

(11)


VP
V'
V
VP
NP
V'
V
NP
nei ge ren
ti
yi jiao
VP
V'
V
VP
NP
V°
[V+NP]
nei ge ren
ti yi jiao
VP
V'
V
VP
NP
V
[ti yi jiao]$_i$
nei ge ren
t_i

If reanalysis does not apply, the verb moves alone to the higher V° position to theta- and Case-mark the object NP *nei ge ren* (那個人) 'that man', yielding the surface string *ti nei ge ren yi jiao* (踢那個人一腳) 'kick that man one kick', which corresponds to (9a).

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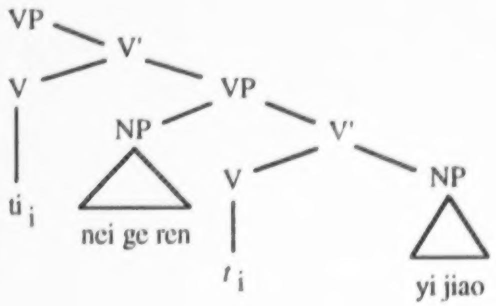
[8] According to Larson (1988a), structural Cases, i.e. the canonical Subjective Case and Objective Case, or Nominative Case and Accusative Case, respectively, are contained in Infl and the Objective Case is transmitted to the verb from Infl. The subject NP is base-generated in the Spec of a higher VP where it receives a theta-role (in the spirit of the VP-internal Subject Hypothesis (Koopman and Sportiche 1987; Kuroda 1988; Kitagawa 1986, among others)) and then moves to the Spec of Infl to receive Nominative Case. The direct object in a complex predication structure is base-generated in the Spec of the lower VP where it is construed as subject of a "small clause" (Cf. Chomsky 1986a). When a transitive verb assigns two Objective Cases, one is structural and the other is inherent. The former is contained in Infl and is transmitted to the verb that it governs. The latter is a purely lexical property of the verb. In both cases, Case assignment is implemented by the requirement that V govern and be adjacent to the Case recipient.

Adopting these ideas to our discussion, we may hypothesize that the direct object receives a structural Case that is transmitted from Infl to a VP headed by a governing verb. Hence, in the first two configurations of (11), the verb does not govern the direct object. To achieve Case-assignment requirement, the verb has to move upward until it reaches a governing position, i.e. the head of the higher VP, as illustrated in the third structural representation of (11) and the one of (12). This accounts for the motivation of verb movement as discussed in Larson.

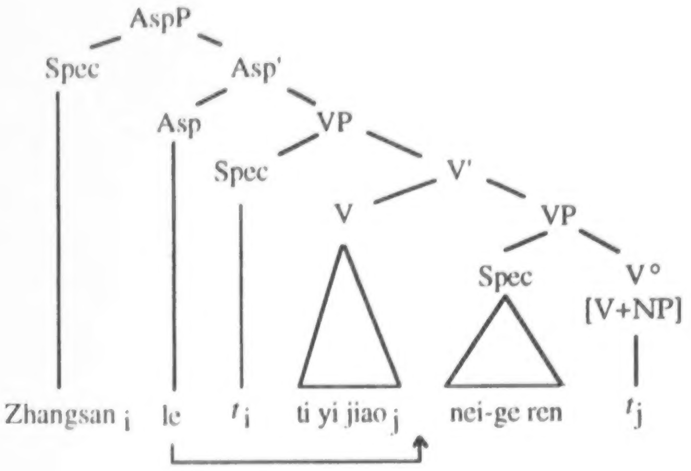
As for the verb internal measure phrase, it receives an inherent Objective Case either directly from the verb if it is reanalyzed with the verb into a new V°, as is the case in (11), or from the trace left by the verb if the verb moves upward alone, as reflected in (12). It is pointed out in Larson that the trace left by the moved verb inherits the Case-assigning properties from the verb.

(12)



Now let us consider the case of aspect markers in these sentences. If the perfective aspect marker *le* is a base-generated Asp° morpheme, and it is lowered to the verb at S-structure, we would expect it to be attached to the verb, namely, it has to be attached to the single verb or the reanalyzed V°. In the latter case, the resultant word order based on the example of (10a) as well as (11) would be *ti yi jiao le* (踢一腳了) 'kick one kick Asp' instead of *ti-le yi jiao* (踢了一腳) 'kick Asp one kick'. (13) illustrates the point.

(13)



(13) would yield an ill-formed sentence such as (14). The ungrammaticality of (14) thus eliminates the possibility that aspect lowering takes place in the Chinese syntax.

(14) * Zhangsan ti yi jiao le nei-ge ren.
Zhangsan kick one foot Asp that-CL person
* 張三踢一腳了那個人。

The only plausible analysis for the aspect markers in question is, then, that they are base-generated with the verb as verbal suffixes. An immediate question arises as to how to correlate the base-generated aspect markers and the functional head Asp° in AspP. In other words, how are the aspectual features in Asp° licensed if AspP is a functional category the head of which contains features?

In Chomsky (1991), it has been emphasized that all features in the syntactic derivation must be licensed as required by the principle of Full Interpretation (FI) (Chomsky 1986a) at LF. The intuitive content of the notion of FI is that an element can appear in a presentation only if it is properly "licensed". Hence, any unlicensed feature will result in an "illegitimate" object and the structure involved will not be fully interpreted.

Suppose that AspP in Chinese does not project its head and Spec morphologically,[9] but the Asp° node contains aspectual features such as [+perfective], [+durative], etc. which must be licensed at LF as required by the principle of FI. Further, assume that the licensing is implemented via verb plus its relevant aspect marker(s) adjoining to the feature containing head, Asp°. Based on the recent proposals by Kitagawa (1986), Speas (1991), and Chomsky (1991), we may interpret the feature checking process as involving the following procedures (see also Gu 1992c). When generated from the base, the Chinese aspect suffixes are each inherently marked with relevant features such as [+perfective], [+durative], etc. These features must be checked off for the LF interpretation. The empty Asp° in Infl serves as the checking domain of these features. The semantic content of aspect in Asp° requires that in the feature checking process the verbal suffix move along with its host verb to the feature checking domain because the latter is the main predicate of an action or an event to which the aspectuality is relevant.

Now consider the relevant level at which the feature checking process takes place. Recent proposal of Chomsky and Lasnik (1991), formulated in the spirit of economy of derivation (Chomsky 1991), states that if operations need not be overt to satisfy certain conditions, they are assigned to the LF component, applying as "late" as possible in the derivation. In light of this proposal, we postulate that in the present case the movement of the verb plus its aspect suffix to Asp° must be an LF operation, assuming that only morphological conditions need to be satisfied overtly and that the aspect licensing process in Chinese is not morphologically based. Since the Chinese aspect markers are not Infl morphemes, operations pertaining to their feature licensing can be postponed until the derivation reaches the level of LF.

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[9] By assuming this, we are obliged to say that in Chinese AspP is dominated by TP which overtly projects its Spec and head. This possibility allows the VP-internal subject (see section 4) to raise to the Spec of TP for Nominative Case assignment. The head of TP contains [± finite] features, presumably.

Support for this view is already present in our earlier observation in (8b) that overt verb movement to Asp° results in ungrammaticality. In section 4, we discuss a further piece of evidence that the Chinese Infl does not motivate overt verb movement.

4. The Empty Infl in Chinese

Under the various versions of internal subject hypothesis (ISH) (Koopman and Sportiche 1985; Kuroda 1985; Kitagawa 1986, among others), subject in languages like English is base-generated in the Spec of VP where it receives a theta-role under the maximal projection of VP. Then it is moved to the Spec of IP at S-structure to receive Nominative Case from Infl. In the framework of Chomsky (1986b), the movement of subject to the Spec of Infl is made possible by a process of V-raising to Infl, thereby making Infl into a lexical item and debarrierizing VP for subject raising. V-raising to Infl, as pointed out by Chomsky, is required by morphological properties. For instance, tense and aspect morphemes in Infl must be picked up by the verb.

Aoun and Li (1989) argue that while V-raising to Infl and subject raising from the Spec of VP to the Spec of IP exist in English, they are not available in Chinese due to the degenerate nature of the Chinese Infl. According to A&L, subject in Chinese always stays in the Spec of VP, because either VP in Chinese counts as a barrier, or alternatively, a trace must be properly bound as well as be lexically governed. Not being a lexical item, Infl cannot lexically govern the trace of the raised subject. A&L further contend that subject raising to the Spec of IP does not apply in Chinese because the language admits *double subject structures*. Their arguments are derived from the following examples (A&L's (26)):

(15) a. Zhangsan, erzi kaoshang daxue le.
Zhangsan son passed college Asp
張三，兒子考上大學了。
'Zhangsan's son passed the entrance exam for a college.'

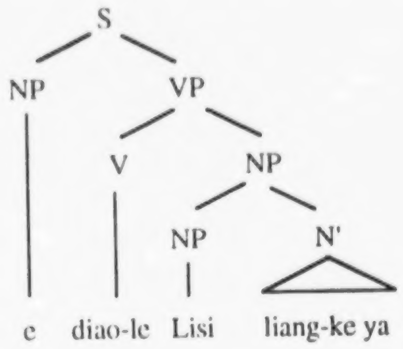
b. Zhangsan, tou hen teng.
Zhangsan head very ache
張三，頭很疼。
'Zhangsan's head aches.'

Based on A&L, an NP moving from the Spec of VP to the Spec of IP in Chinese would violate the Projection Principle and the Theta Criterion because in Chinese both Spec positions are Case and theta positions.

An argument based on examples of this type seems to be too sketchy, however. Notice that of the two preverbal NPs in (15), the first one is semantically a Possessor of the second one. Recent work done by Xu (1991) suggests that in Chinese a Possessor and a Possessee can be projected under the same NP node. Under Xu's analysis, in a sentence like (16), the surface subject *Lisi* is base-generated in the Spec of the object NP.

(16) a. Lisi diao-le liang-ke ya.
Lisi fall-Asp two-CL teeth
李四掉了兩顆牙。
'Two of Lisi's teeth fell out.'

b.



Since *diao* 'fall' is an unaccusative verb, it lacks a semantic subject. The derivation of the surface subject from the object NP position is either required by the Extended Projection Principle (Chomsky 1982) which states that a sentence must have a subject, or motivated by the Unaccusative Hypothesis (Perlmutter 1979; Burzio 1986) that the object cannot receive Case from an unaccusative verb and it must move to the subject position in order to be Case-marked. Hence *Lisi* undergoes the process of Possessor Raising to get to the subject position.[10] Alternatively, *Lisi* and *liang-ke ya* 'two teeth' can move as one constituent to the subject position, yielding (17a). After that, *de* is inserted to derive (17b).

(17) a. Lisi liang-ke ya diao le
Lisi two-CL teeth fall Asp
李四兩顆牙掉了
b. Lisi-de liang-ke ya diao le.
Lisi's two-CL teeth fall Asp
李四的兩顆牙掉了。
'Lisi's two teeth fell out.'

This analysis provides the option that a Possessor NP can be base-generated within an NP.[11] There is no need, therefore, to assume two separate subject positions for the Possessor and the Possessee NPs in (15). A&L's preliminary assumption that Chinese structurally excludes subject raising to the Spec of IP is thus invalidated.

A&L's view is also challenged by Huang (1990). In his analysis of VP-fronting and reconstruction, Huang is able to show that in contrast to object-fronting, when a VP is fronted in English as well as in Chinese, a trace of the subject must also be fronted with it, suggesting that the subject in both languages has raised from the Spec of VP to the Spec of IP.

Now that subject raises from the Spec of VP to the Spec of IP in Chinese just as it does in English, presumably raising is forced by the requirement of nominative Case assignment in both languages, do both languages require V-movement to Infl, as noted earlier, to allow for such a raising? For English, empirical evidence has been shown by various authors that V-raising to Infl is motivated by fulfilling morphological requirements (in particular, Chomsky 1991; Pollock 1989). For Chinese, we have argued that V-raising to Infl (Asp°) is not overt.

In Huang (1982), it is postulated that Infl in Chinese is lexical, so it lexically governs VP and presumably its Specifier. Abstracting away from the issue concerning the licensing of aspectual morphemes in Chinese, the consequence of Huang's assumption is that verbs in Chinese do not have to raise to Infl at S-structure in order to legitimatize the movement of the VP internal subject to the Spec of Infl, since VP is not a barrier for such a movement.

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[10] In Xu, it is assumed that the genitive marker *de* results from a PF insertion so that no problem of stranding *de* will arise in the case of a Possessor Raising structure.

[11] This possibility has been discussed in Tang (1990a). Tang argues that in a Chinese nominal expression, *Zhangsan-de nei san-ben shu* (張三的那三本書) 'those three books of Zhangsan', *Zhangsan* is base-generated in Spec of NP and later raised to Spec of DP . In this respect, we consider it legitimate to say that in Chinese there exists the possibility of Possessor Raising at the phrase level as well as at the sentence level.

With respect to verb raising, Huang's assumption about the Chinese Infl can be entertained in two important ways. On the one hand, it offers the possibility of verb raising through Infl without giving rise to violation to the chain well-formedness condition formulated in Li (1990). On the other hand, it eliminates the possibility that verb raising to Infl takes place at S-structure in Chinese. We briefly discuss these two respects below.

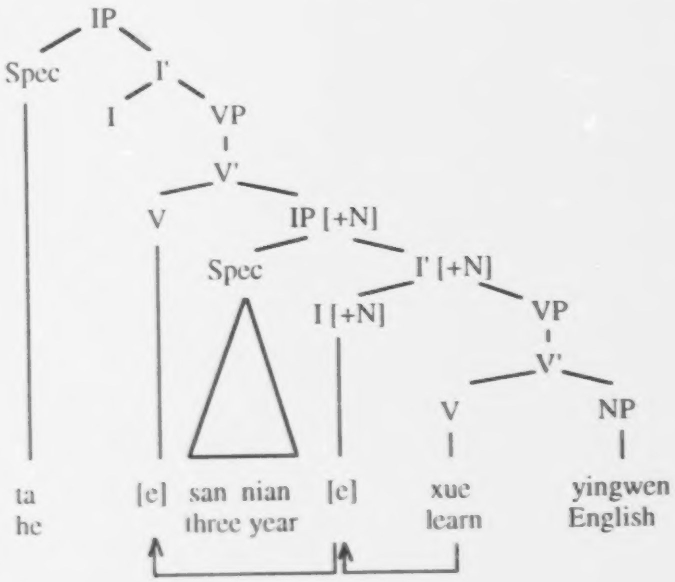
In Chinese, NPs, VPs, and APs can take corresponding measure expressions, which are traditionally referred to as *mingliangci* (名量詞) 'measure phrases of nouns', *dongliangci* (動量詞) 'measure phrases of verbs', and *xingliangci* (形量詞) 'measure phrases of adjectives', respectively. Huang (1991) discussed a type of *dongliangci*, i.e. verbal measure phrases which semantically quantify over events/actions, but syntactically behave like *mingliangci*, i.e. measure phrases of nouns. For instance, the prenominal duration and frequency phrases in sentences like (18) and (19) appear preceding nouns rather than verbs:

(18) a. ta xue-le san nian yingwen.
he learn-Asp three year English
他學了三年英文。
'He learned English for three years.'
b. * ta san nian xue-le yingwen.
he three year learn-Asp English
* 他三年學了英文。
(19) a. ta qu-le yi ci Beijing.
he go-Asp one time Beijing
'He went to Beijing once.'
他去了一次北京。
b. * ta yi ci qu-le Beijing.
he one time go-Asp Beijing
* 他一次去了北京。

According to Huang, this syntax-semantics mismatch can be resolved if these sentences are viewed as involving i) a structure of gerundive nominalization, which the measure phrases are modifying, and ii) a process of verb-raising from the embedded nominal phrase to the matrix clause, because the latter has a lexically empty verb which must be morphologically supported.

Under Huang's system, a sentence like (18a) has an abbreviated underlying structure in (20):[12]

(20)



Based on the fact that in Chinese, virtually all action verbs can occur in this structure, Huang (1992) makes a further claim that the empty verb in the matrix sentence is a DO type of action verb which subcategorizes for an event argument identified in the structure of (20) by the gerundive nominal. The external argument of DO is an Agent. This claim generalizes the verb movement behavior in Chinese, that is, all action verbs may move out of the event structure represented by the nominal IP into the matrix DO verb.

The relevance of Huang's analysis to our discussion is that an embedded action verb is now able to move head-to-head out of a nominal IP into the matrix V position. There are two conceivable consequences of such an analysis. The first consequence is that on the surface value such a movement may violate the chain well-formedness constraint formulated by Li (1990).

Li makes the observation that in general the complement of a causative verb does not contain Infl or clausal elements, as reflected in (21). Li attributes this fact to the structural consideration that the complement of a causative verb is a VP "small clause" (Cf. Chomsky 1986a), as shown in the structure of (22). Since no Infl is projected in the small clause, neither an infinitive nor a full clause is expected to occur in this complement structure.

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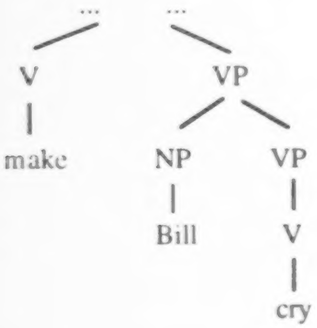
[12] Huang (1992) does not provide detailed information as to whether the matrix subject is base-generated in Spec of VP and raised to Spec of IP. According to Huang (1990), subject in Chinese follows from the Internal Subject Hypothesis (ISH) in the sense of Kuroda (1988) and Kitagawa (1986). To be consistent, we would assume that the subject in (20) is raised from the Spec of VP.

(21) a. John made Bill cry.
b. * John made Bill to cry.
c. * John made (that) Bill cried.

(22)



The relevance for such a structural constraint on the complement, according to Li, is that causative predicates are most commonly Verb Incorporation triggering elements. In many languages, the verb in the complement phrase raises to adjoin to the causative verb via head movement, a process characterized by Baker (1988) as Verb Incorporation (VI). Li argues that a necessary condition on VI is that the matrix verb must be subcategorized for a VP complement instead of a clausal complement. This condition, as postulated in Li, is imposed by the general principle of chain well-formedness for head movement. Under this principle, a movement chain must contain elements of the same kind. For instance, a lexical chain contains only lexical heads such as V, whereas a functional chain has only functional heads in it, i.e. C, I, etc. (22) provides the right configuration for head movement in languages exhibiting VI. If VI applies, the lower verb moves into the head of the higher verb, forming a chain which contains two Vs; hence, it is a well-formed chain. On the contrary, if the complement of the matrix verb is a clausal element such as a CP, the embedded verb would move first to I, and then to C, and finally adjoin to the matrix verb. Such a movement would constitute a chain containing inconsistent elements, i.e. V, C, I, V. The two lexical Vs would have two intervening functional elements between them, i.e. C, and I, thereby producing an ill-formed chain.[13]

Come back to the structure in (20) proposed by Huang (1991; 1992). Notice that the movement of the embedded verb in (20) involves two steps. First, the verb moves into the Infl of its own clause, and then it moves into the matrix V° position. The chain resulting from such a movement contains inconsistent elements [V, I, V]. To maintain the chain well-formedness condition, whereas to allow in a structure like (20) the verb to move through the embedded Infl and further into the matrix V, Huang (1992) postulates that the Chinese Infl is morphologically empty; verb raising through Infl does not change the value of the verb and a chain resulting from such a movement is consistently formed by Vs. Hence, Li's chain well-formedness condition is respected.

A further consequence of assuming Huang's interpretation of Chinese Infl is that overt verb movement through the nominative Infl, a step necessary in the derivation of (20), does not change the category of V, which is a [+V, -N] element, into a [+N, -V] element. Since Infl is morphologically empty, no categorial conflict arises concerning the moved verb. Note that the same effect does not obtain in English, because an English nominal Infl inevitably contains an *-ing* affix which is to be attached to a verb that moves into Infl. Further movement of the nominalized verb into a higher verb is thus prohibited in that language.

The morphologically empty Infl indicates that elements which are normally considered to be Infl elements in other languages, such as the tense, agreement and aspect morphemes, are not available in the Chinese Infl. Hence, no head movement, i.e. verb raising to Asp° or aspect lowering, is to be motivated at S-structure. This provides support for our analysis about the Chinese aspect markers as base-generated verbal suffixes.[14]

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[13] Li attributes this chain well-formedness condition to the Condition C of the binding theory, as given in Chomsky (1986b):

(i) An r-expression is A-free (in the domain of the head of its maximal chain).

With some modification of the definitions of the binding theory which depends on A- versus A-bar positions, Li proposes that the kind of X° elements, i.e. V°, I°, and C°, be interpreted in terms of T(heta-related)-positions and T-bar positions, in the sense that they are either directly or indirectly involved in theta-assignment and that these notions be applied to the definition of the binding conditions:

(ii) A. An anaphor is locally T-bound.
B. A pronoun is locally T-free.
C. A variable is T-free (in the domain of the head of its maximal chain).

A variable is in turn defined as the following:

(iii) An empty category is a variable iff it is in a T-position and is locally T-bar-bound.

With these definitions, Li is able to show that in an inconsistent X° chain, e.g. (V, I, V), the original trace of the V is T-bar-bound by I as well as T bound by V, resulting in an improper binding relation which holds between X° and XP, and Condition C as defined in (ii) above is violated.

5. Conclusion

To conclude, aspect markers in Mandarin Chinese are not projected as morphemes in the functional category of Asp°; they are suffixed to the verb in the base. The overt head movement convention of the verb to Asp° or aspect lowering to the verb found in languages where aspect markers are morphemes in Infl is not relevant to the Chinese data. It is proposed that the head of AspP serves as the checking domain of aspect features which must be licensed onto corresponding verbs plus their suffixes. The licensing is not implemented via verb movement at S-structure, rather, it is done by [V+Asp] raising to Asp° at LF. Such an analysis is made possible by the assumption that Infl in Chinese is morphologically empty so that overt head movement triggered by the fulfillment of morphological requirement is unmotivated in the language.

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Intuitive Judgments of Hong Kong Signers about the Relationship of Sign Language Varieties In Hong Kong and Shanghai[1]

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Abstract

It is generally believed that the origins of sign language varieties in Hong Kong can be traced to a small group of deaf people from Shanghai, Nanjing, and Hangzhou who established private tuition for deaf people in Hong Kong in 1949.

In order to empirically examine the claim that sign language varieties in Hong Kong developed partially from sign language varieties in Shanghai, this paper will examine the intuitive judgements of Hong Kong signers about the similarities and difference in basic vocabulary items in sign language varieties in Shanghai and in Hong Kong. Specifically, the paper will include a discussion of 1) the type of basic vocabulary to be compared, 2) the data collected from Hong Kong and Shanghai sign language varieties, and 3) an analysis of the intuitive judgement data of the Hong Kong signers. The conclusion summarizes the findings and discusses implications for future research.

Introduction

Historical-comparative research on sign languages in a given region must be done independently of any spoken languages in the same region, since the sign language situation in given countries may contrast sharply with the spoken language situation. For example, it is clear that (North) American Sign Language (ASL) is much more closely related to French Sign Language (Stokoe, Casterline, and Croneberg 1965; Woodward 1978) and to New Costa Rican Sign

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Language (Woodward 1992) than it is to British Sign Language.

Since sign language varieties in many countries have not been studied in depth, little is known about their historical origins. Hong Kong is a particular case in point. It is generally believed that the origins of sign language varieties in Hong Kong can be traced to a small group of deaf people from Shanghai, Nanjing, and Hangzhou who came to Hong Kong in 1949, established private tuition for deaf people in Hong Kong, and brought their sign language varieties to Hong Kong (Hong Kong Welfare Society for the Deaf 1987). It is also believed that Hong Kong signs are much more closely related to signs from Shanghai and Nanjing than they are to signs from Hangzhou (Hong Kong Welfare Society for the Deaf 1987).

To date, there have been no empirical studies that would confirm or refute this account of the development of sign language varieties in Hong Kong. However, it should be relatively easy to confirm or refute the account by empirically examining similarities and differences in basic vocabulary items across the sign language varieties in question. If sign language varieties in Hong Kong developed from sign language varieties in Shanghai, Nanjing, and to a lesser extent, Hangzhou within the last 44 years, basic vocabulary items in Hong Kong signing should be highly similar to basic vocabulary items in Shanghai, Nanjing, and/or Hangzhou varieties of signing and fluent users of sign language varieties in Hong Kong should be able to recognize these close similarities in basic vocabulary.

Presently, because available video-recorded sign language data in Hong Kong is limited to sign language varieties in Hong Kong and Shanghai, this paper will attempt only to determine the possible relationship between sign language varieties in Hong Kong and in Shanghai. In order to examine the claim that sign language varieties in Hong Kong developed from sign language varieties in Shanghai, this paper will examine the intuitive judgements of Hong Kong signers about the similarities in basic vocabulary items in sign language varieties in Shanghai and in Hong Kong. Specifically, the paper will include a discussion of 1) the type of basic vocabulary to be compared, 2) the data collected from Hong Kong and Shanghai sign language varieties, and 3) an analysis of the intuitive judgement data of the Hong Kong signers. The conclusion summarizes the findings and discusses some implications for future research.

Basic Vocabulary to be Compared

Table 1 below lists the basic vocabulary that is used for comparing Shanghai and Hong Kong signs in this paper.

TABLE 1: SPECIAL VOCABULARY LIST FOR SIGN LANGUAGES

1. all
2. animal
3. bad
4. because
5. bird
6. black
7. blood
8. child
9. count
10. day
11. die
12. dirty
13. dog
14. dry
15. dull
16. dust
17. earth
18. egg
19. fat
20. father
21. feather
22. fire
23. fish
24. flower
25. good
26. grass
27. green
28. heavy
29. how
30. hunt
31. husband
32. ice
33. if
34. kill
35. laugh
36. leaf
37. lie
38. live
39. long
40. louse
41. man
42. meat
43. mother
44. mountain
45. name
46. narrow
47. new
48. night
49. not
50. old
51. other
52. person
53. play
54. rain
55. red
56. right
57. river
58. rope
59. salt
60. sea
61. sharp
62. short
63. sing
64. sit
65. smooth
66. snake
67. snow
68. stand
69. star
70. stone
71. sun
72. tail
73. thin
74. tree
75. vomit
76. warm
77. water
78. wet
79. what
80. when
81. where
82. white
83. who
84. wide
85. wife
86. wind
87. with
88. woman
89. wood
90. worm
91. year
92. yellow
93. full
94. moon
95. brother
96. cat
97. dance
98. pig
99. sister
100. work

While it is common to use the original 200 word Swadesh list to compare for cognates in basic vocabulary across spoken languages, it is not generally desirable to use the same list for sign language research. Use of the original 200 word Swadesh list in sign language research may result in slight overestimation of the relationship of closely related sign languages, moderate overestimation of the relationship of loosely related sign languages, and great overestimation of the relationship of historically unrelated sign languages (Woodward 1991). These overestimations are due to the fact that the original 200 word Swadesh list contains many items, such as body parts and pronouns, that are represented indexically in sign languages. The comparison of indexic signs results in a number of false potential cognates. To avoid this problem, I am using the special vocabulary list shown in Table 1 above. The modified list removes most of the potentially indexic signs from the original 200 word Swadesh list.

Data From Sign Language Varieties in Shanghai and Hong Kong

Sign language data from Shanghai were collected in the United States in the mid 1980's from two fluent users of Shanghai Sign Language. The two consultants were both born deaf in Shanghai, learned how to sign in Shanghai at an early age, and had been residents in Shanghai all of their lives. Both were dancers in a Shanghai dance company for deaf individuals and were on tour in the United States. Both consultants were in their early twenties; one was male and the other female.

Both consultants from Shanghai were given a written Chinese version of the basic vocabulary list in Table 1 above and simultaneously videotaped while signing the list. The Chinese version of the basic vocabulary list was done by a native speaker of Chinese in consultation with the author.

Sign language data from Hong Kong were collected in Hong Kong in 1992 from four fluent users of Hong Kong Sign Language. The four consultants were all born deaf in Hong Kong, learned how to sign in Hong Kong at an early age, and had been residents of Hong Kong all of their lives. Two consultants were teenage males, one was a female in her early twenties, and the fourth was a man in his early forties.

The four consultants from Hong Kong were given Chinese translations of the basic vocabulary list and were told that they would be shown a videotape of two Shanghai signers signing all the items on the list. The Hong Kong consultants were told to watch the videotape and to circle the Chinese translation of any Shanghai sign item that they thought was similar enough to Hong Kong signs to be understood by a Hong Kong signer. The consultants were allowed to see each sign as many times as they needed to make a decision. In fact, consultants only needed to watch the great majority of signs once.

Analysis of the Intuitive Judgement Data of Hong Kong Signers

Tables 2 to 5 record the responses of each of the four Hong Kong consultants. Items that were judged by the consultant to be similar are shaded; items that were judged by the consultant to be different are in normal print.

TABLE 2: RESPONSES OF CONSULTANT 1 (66% JUDGED SIMILAR)

1. all
2. animal
3. bad
4. because
5. bird
6. black
7. blood
8. child
9. count
10. day
11. die
12. dirty
13. dog
14. dry
15. dull
16. dust
17. earth
18. egg
19. fat
20. father
21. feather
22. fire
23. fish
24. flower
25. good
26. grass
27. green
28. heavy
29. how
30. hunt
31. husband
32. ice
33. if
34. kill
35. laugh
36. leaf
37. lie
38. live
39. long
40. louse
41. man
42. meat
43. mother
44. mountain
45. name
46. narrow
47. new
48. night
49. not
50. old
51. other
52. person
53. play
54. rain
55. red
56. right
57. river
58. rope
59. salt
60. sea
61. sharp
62. short
63. sing
64. sit
65. smooth
66. snake
67. snow
68. stand
69. star
70. stone
71. sun
72. tail
73. thin
74. tree
75. vomit
76. warm
77. water
78. wet
79. what
80. when
81. where
82. white
83. who
84. wide
85. wife
86. wind
87. with
88. woman
89. wood
90. worm
91. year
92. yellow
93. full
94. moon
95. brother
96. cat
97. dance
98. pig
99. sister
100. work

TABLE 3: RESPONSES OF CONSULTANT 2 (66% JUDGED SIMILAR)

1. all
2. animal
3. bad
4. because
5. bird
6. black
7. blood
8. child
9. count
10. day
11. die
12. dirty
13. dog
14. dry
15. dull
16. dust
17. earth
18. egg
19. fat
20. father
21. feather
22. fire
23. fish
24. flower
25. good
26. grass
27. green
28. heavy
29. how
30. hunt
31. husband
32. ice
33. if
34. kill
35. laugh
36. leaf
37. lie
38. live
39. long
40. louse
41. man
42. meat
43. mother
44. mountain
45. name
46. narrow
47. new
48. night
49. not
50. old
51. other
52. person
53. play
54. rain
55. red
56. right
57. river
58. rope
59. salt
60. sea
61. sharp
62. short
63. sing
64. sit
65. smooth
66. snake
67. snow
68. stand
69. star
70. stone
71. sun
72. tail
73. thin
74. tree
75. vomit
76. warm
77. water
78. wet
79. what
80. when
81. where
82. white
83. who
84. wide
85. wife
86. wind
87. with
88. woman
89. wood
90. worm
91. year
92. yellow
93. full
94. moon
95. brother
96. cat
97. dance
98. pig
99. sister
100. work

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TABLE 4: RESPONSES OF CONSULTANT 3 (65% JUDGED SIMILAR)

1. **all**
2. animal
3. **bad**
4. because
5. **bird**
6. black
7. blood
8. **child**
9. **count**
10. day
11. **die**
12. **dirty**
13. dog
14. dry
15. dull
16. **dust**
17. **earth**
18. **egg**
19. fat
20. **father**
21. **feather**
22. **fire**
23. **fish**
24. **flower**
25. **good**
26. grass
27. green
28. heavy
29. **how**
30. **hunt**
31. **husband**
32. ice
33. if
34. **kill**
35. **laugh**
36. **leaf**
37. lie
38. **live**
39. **long**
40. louse
41. **man**
42. **meat**
43. **mother**
44. **mountain**
45. **name**
46. narrow
47. **new**
48. night
49. **not**
50. **old**
51. other
52. **person**
53. play
54. **rain**
55. **red**
56. right
57. river
58. **rope**
59. salt
60. sea
61. **sharp**
62. **short**
63. sing
64. **sit**
65. **smooth**
66. **snake**
67. **snow**
68. **stand**
69. **star**
70. **stone**
71. **sun**
72. tail
73. **thin**
74. **tree**
75. **vomit**
76. **warm**
77. **water**
78. **wet**
79. **what**
80. when
81. where
82. **white**
83. who
84. **wide**
85. wife
86. **wind**
87. with
88. **woman**
89. wood
90. **worm**
91. year
92. **yellow**
93. **full**
94. **moon**
95. **brother**
96. **cat**
97. dance
98. pig
99. **sister**
100. **work**

TABLE 5: RESPONSES OF CONSULTANT 4 (67% JUDGED SIMILAR)

1. **all**
2. animal
3. **bad**
4. because
5. **bird**
6. black
7. blood
8. **child**
9. **count**
10. day
11. **die**
12. **dirty**
13. dog
14. dry
15. dull
16. **dust**
17. **earth**
18. **egg**
19. fat
20. **father**
21. **feather**
22. **fire**
23. **fish**
24. **flower**
25. **good**
26. grass
27. green
28. heavy
29. **how**
30. **hunt**
31. **husband**
32. ice
33. if
34. **kill**
35. **laugh**
36. **leaf**
37. lie
38. **live**
39. **long**
40. **louse**
41. **man**
42. **meat**
43. **mother**
44. **mountain**
45. **name**
46. narrow
47. **new**
48. night
49. **not**
50. **old**
51. other
52. **person**
53. play
54. **rain**
55. **red**
56. right
57. river
58. **rope**
59. salt
60. sea
61. **sharp**
62. **short**
63. sing
64. **sit**
65. **smooth**
66. **snake**
67. **snow**
68. **stand**
69. **star**
70. **stone**
71. **sun**
72. **tail**
73. **thin**
74. **tree**
75. **vomit**
76. **warm**
77. **water**
78. **wet**
79. **what**
80. when
81. where
82. **white**
83. who
84. **wide**
85. wife
86. **wind**
87. with
88. **woman**
89. wood
90. **worm**
91. year
92. **yellow**
93. **full**
94. **moon**
95. **brother**
96. **cat**
97. dance
98. pig
99. **sister**
100. **work**

All four Hong Kong signers were remarkably similar in their evaluations of the Shanghai signs. Percentages of signs judged similar varied by only two percent, from 66% to 68% similar. In addition, the four consultants independently agreed on 96 out of the

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total of 100 signs. The four signs where judgements varied are: "louse", "person", "salt", and "tail". Three of the four signers said the Shanghai signs for "louse" and "person" were similar to the Hong Kong signs; two of the four signers stated that the Shanghai for "tail" was similar to the Hong Kong sign, and one person believed that the Shanghai and Hong Kong signs for "salt" were similar.

Summary and Conclusion

The data from the intuitive judgements of the four Hong Kong signers would indicate that Hong Kong signs show a close relationship to Shanghai signs. However, the data also suggest that while Hong Kong signs were heavily influenced by Shanghai signs, Hong Kong signs that are used today do not derive solely from Shanghai signs, but probably result from a mixture of Shanghai signs with other sign varieties. There are three major reasons for proposing a hypothesis of language mixture.

First, it is important to note that basic sign language vocabulary does not change appreciably faster than spoke languages. Gejl'man (1957) found a 97.5% rate of similarity in basic Russian Sign Language vocabulary in the 1950's as compared with Russian Sign Language vocabulary in an 1835 dictionary. Similarly, Woodward (1978) found a 99% rate of similarity in basic American Sign Language vocabulary in 1978 as compared with American Sign Language vocabulary in a 1913 dictionary. In such cases of closely related sign vocabulary, fluent signers are easily able to recognize all similarities in basic sign vocabulary.

Secondly, the percentages of similarity in basic vocabulary between Shanghai and Hong Kong signs (between 66% to 68%) show strong parallels to other sign languages where there is historical evidence of language mixture. American Sign Language which resulted from the mixture of French Sign Language and indigenous varieties of sign language in the United States circa 1817 (Woodward 1978, Groce 1985) has a 61% rate of cognates in basic vocabulary with French Sign Language (Woodward 1978). New Costa Rican Sign Language (used by signers under the age of 30 in San Jose, Costa Rica) developed within the last thirty years because of a mixture of American Sign Language and older indigenous forms of sign language in Costa Rica has a 63% rate of cognates with

American Sign Language (Woodward 1992).

Thirdly, there is evidence that language mixing often occurs at a very rapid rate. Once the abrupt restructuring is completed, normal internal change begins to happen at the "normal" rate. Examples of this can be found with New Costa Rican Sign Language and American Sign Language. As mentioned earlier, when comparing Costa Rican signs used by people under the age of 30 with signs used by signers in the United States, the rate of cognates in basic vocabulary is 63%. When comparing Costa Rican signs used by Costa Rican signers under the age of 30 with signs used by Costa Rican signers over the age of 30, there is only a 42% rate of cognates. More than half the vocabulary shifted within one generation. Comparative studies of American Sign Language and French Sign Language also point out that most of the shifts in basic vocabulary in American Sign Language occurred within 18 to 52 years after French Sign Language was brought to the United States. The relatively short time separation of Shanghai and Hong Kong signs (roughly years) suggests that a similar abrupt mixture of Shanghai signs with other forms of signing could have taken place.

While the results of the research reported in this paper strongly suggest 1) a strong historical relationship between Hong Kong signs and Shanghai signs and 2) language mixture of several sign language varieties as a basis for the development of modern Hong Kong signs, the complete picture of the historical development of sign language varieties in Hong Kong is still lacking. For example, we do not know for sure what other sign language varieties may have played a role in the language mixture that resulted in the development of modern Hong Kong signs. Given generally accepted beliefs about the origins of Hong Kong signs, it is reasonable to assume that sign language varieties in Hong Kong will also show similarities to Nanjing and Hangzhou varieties of signing. However, given historical-comparative research on other sign languages, there may have been other sign language varieties involved in the development of modern Hong Kong signs.

Sociolinguistically, it is somewhat unrealistic to expect that deaf people in Hong Kong, would not have developed local forms of signing. In many parts of the world without formal educational systems for deaf individuals (including highly isolated areas), spontaneous development of indigenous sign languages have occurred.

Some of these places include: pre-1817 United States (Groce 1985); Adamorobe, Ghana (Frishberg 1978, 1987); Yucatan, Mexico (Johnson 1991), Rennell Island (Kuschel 1973), and Providence Island (Washabaugh, Woodward, and De Santis 1978, Woodward 1982), among others.

Such indigenous sign language varieties are easily changed when the imposition of a foreign or outside sign language with educational prestige is imposed for educational purposes. This is especially true when the society views deafness as a handicap or disability rather than as a linguistic difference. Thus, the role of older indigenous forms of signing in the development of a modern sign language is easily and quickly forgotten or sometimes never known and has to be rediscovered through careful comparative linguistic analysis and reconstruction. Such is clearly the case with American Sign Language in the United States. Until the 1970's, the traditional view was that American Sign Language resulted solely from the introduction of French Sign Language to the United States by Laurent Clerc, a French deaf man, who along with T.H. Gallaudet established the first public school for deaf children in the United States in 1817. It was not until 1978, that a formal linguistic comparison of French and American signs suggested earlier forms of indigenous signing in the United States (Woodward 1978). In 1980, historical research confirmed the existence of indigenous forms of signing as early as 1714, more than 100 years before the arrival of French Sign Language in the United States (Groce 1985).

It is not unreasonable to posit a similar scenario for the development of modern varieties of Hong Kong signs. However, it must be stressed that much more comparative linguistic research is needed, not only in Hong Kong but also in various parts of China to confirm or deny the actual existence of signing in Hong Kong prior to the arrival of signs from Shanghai and probably from Nanjing and Hangzhou in 1949.

Such comparative research will require a great deal of time and effort, and ideally such comparative research needs the efforts of a group of linguists with various skills. Unfortunately, until such research is completed, all of us in Hong Kong will have an incomplete understanding of the history of a valuable local heritage, the sign language varieties of Hong Kong.

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